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Dreams: A unified theory approach

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Table of Contents

Acknowledgements ii

List of Figures v

Abstract vi

Introduction 1

Chapter 1: Perspectives on Dreaming 7

The Psychoanalytic Perspective 7

The Jungian Perspective 12

The Physiological Perspective 15

Dreaming and Emotions 23

The Evolutionary Perspective 26

Chapter 2: Overview of Unified Theory 31

Tree of Knowledge System 34

Behavioral Investment Theory 36

The Influence Matrix 42

The Justification Hypothesis 45

Chapter 3: Integrative Perspective 50

The Epic of Gilgamesh 50

Freud and Hobson 58

Somatic Marker Hypothesis 68

P - M => E and Somatic Markers.....74

Analysis of Fancy Feast Cat Dream 80

Chapter 4: Irma's Injection 84

Freudian Split.....90

Pinging Around the Matrix.....94

Chapter 5: Conclusion..... 99

Limitations.....105

Future Directions 106

References..... 107

List of Figures

Figure 1 – The Tree of Knowledge System.....34

Figure 2 – The Architecture of the Human Mind.....42

Figure 3 – The Influence Matrix.....44

Figure 4 – The Tripartite Model of Human Consciousness.....49

Abstract

Henriques (2011) proposed a new unified theory of psychology (UT) which he argued could assimilate and integrate divergent lines of thought into a coherent whole. An implication of this claim is that the system can be applied to phenomena that was not addressed in the original work and the current work tests this proposition. Specifically, the current work utilized the UT and its components to examine the dream literature, especially psychodynamic, physiological and evolutionary approaches. Following a brief introduction, the project reviews the various lines of research and interpretations of why we dream and what they may mean for us. Then, the UT is introduced, specifically, the four components, which include: 1) The Tree of Knowledge System; 2) the Justification Hypothesis; 3) Behavioral Investment Theory; 4) the Influence Matrix. The UT framework is designed to transpose the language systems from different theoretical perspectives and map their overlapping and distinctive qualities onto human functioning, and is thus a model that should excel at organizing the fragmented and elusive psychological construct of dreaming. The primary thrust of this work is demonstrating the utility of this organizational scheme. Specifically, the UT allows us to understand that dreams can be understood as serving the function of processing emotional and relational themes to foster problem solving. It also informs us regarding the complicated role of self-consciousness, both in terms of how the rational, justifying portion of consciousness is normally shut off in dreams, and how it sometimes, in rare cases, comes on line in the form of "lucid" dreaming.

In addition to providing a framework for knitting together a number of different threads, the UT also sets the stage for new angles on dream interpretation. This work

explores Freud's famous dream, "Irma's Injection," as a test-case to show the potential utility of Behavioral Investment Theory and the Influence Matrix to offer meaningful and accurate interpretations of dream content. Via the meta-theoretical perspective afforded by the UT, we argue one can delineate key boundaries in Freud's method of interpretation, which can usefully be divided into operating at two levels of analysis. We then showed that there is theoretical support for the validity of Freud's "level 1" analysis, which is comprised of determining the basic affective and relational meaning of dream content. Freud's level 2 analysis, by contrast, was comprised of his attempts to justify all dream content through the lens of his classic dual-drive theory of human motivation, which is seen both by the UT and mainstream modern approaches as misguided. Ultimately, this paper shows strong promise for the development of a UT approach to dream analysis, both in terms of organizing our current knowledge and in terms of pointing the way toward future directions.

Introduction

"Dreaming permits each and every one of us to be quietly and safely insane every night of our lives." -William Dement

At the end of each day, nearly every human being goes through the profound and universal experience of sleep and dreaming (Dement and Vaughan, 1999). As the sun sets behind the horizon, we lie down, close our eyes, undertake a journey of fantastical experience and sensation, and then open our eyes to a new day. For some, none of what has happened is remembered, and sleep is experienced as a hole in time. Others can recall the events of the night in vivid detail. Dreaming is thus an altered state of consciousness that occurs during sleep, and is typically noted for the bizarre and fictional elements experienced in a narrative format and involving a full range of sensory experiences (Hartmann, 2010). Dreaming has been a part of the human experience at least since recorded history (George, 2003), and ever since we have continued to be influenced by this mysterious phenomenon.

Within the scientific community, dreams have been a topic of controversy (Rock, 2004). At one of end a continuum, dreams are seen to be a powerful lens through which to assess and heal the human psyche (Jung, 1945). At the other end, dreams are viewed as meaningless, random stimuli created by an idling brain during sleep (Hobson, 1977). Between these two ends, there are volumes of fragmented theories that elevate partial truths and isolated features. One such example is the intriguing "Costly Signal" theory (McNamara and Szent-Imrey, 2007), which hypothesizes that being able to experience mood-influencing dreams and still function during the day sends signals to potential mates that we have good and desirable genes. The rationale is that high-functioning

dreamers would be sexually selected for in the same way that a moose is selected for the size of its impressively cumbersome antlers, or a peacock for its span of its unwieldy fan of feathers.

This variation in, in part, may be due to the interaction of at least three factors. The first is that dreaming is a politically charged topic within the context of the psychology's fragmentation wars. The Freudian lineage laid early claim to dreams, and those factions defined against psychoanalysis had much to gain by discrediting or ignoring the insights in their competition for defining the field (Rock, 2004). The second is that those who build an early interactive relationship with dreaming may be more invested and interested in learning about dreams as meaningful than those individuals who have a relative paucity of dream experiences (Shealy, 2004). The third is that dreams are mysterious by their nature, and are thus not only technically and financially prohibitive to study empirically, but also elusive to approach personally (Voss, et al., 2009). Even in individuals who naturally recall their dreams, only a fraction of dream content is remembered, and the content that is recalled is bizarre, personal, and difficult to make rational sense of.

In our effort to operationalize our reality into workable systems of constructs that can be prioritized and tested empirically, we encounter this primary problem: scholars and clinicians are fundamentally biased towards the success of their own personal and inherited methods of analysis and intervention (Shealy, 2004). How we define personal success is dependent on the idiographic experiences that shape the strengths and weakness of the individual scholar or clinician. This principle is more apparent when we think about an area where individual differences are visibly pronounced, such as

disciplines or activities that rely upon physical attributes. A naturally tall and lanky individual may find that they are more successful in a sport with task demands found in basketball, whereas a naturally short and heavy individual may notice more inherent success in wrestling. My grandfather once noted that he often had to work harder than others to stand out in football due to his small and slight stature. However, during the second world war, he was selected to be a fighter pilot, a coveted position, in part due to his fitting comfortably in the cockpit of the compact aircraft.

Psychic structures, while more flexible and adaptable than certain physical structures, are, *in principle*, the same. An open, intuitive, and relationally oriented individual may find natural talent within a humanistic tradition of clinical therapy, whereas a linear and analytically-minded individual may find natural success within a cognitive behavioral model. This gravitation towards what we are good at, and what variables we naturally perceive, can lead to specialization. Specialization has a potential benefit and drawback. The benefit is that specialization can allow for greater mastery in the nuances of a system, which then facilitates intuitive and useful clinical or scholarly decision making within that system. The drawback is that a silo-effect can take place in which the nuances of other schools of thought and practice are disregarded due to personal preference and incomplete comprehension (Henriques, 2011). In such a mode of confirmation bias, features of a differing system that are perceived by the opposing psychologist to be esoteric are likely to be evaluated out of proper context and used to judge the entire differing system as obsolete, useless, or reckless. When this occurs on the large group scale, whole systems can mature with an identity formed around opposition to other major theories that offer valuable insights regarding our total reality.

This human inertia towards specialization and simplicity may be suited for solving discrete tasks to the satisfaction of a closed, stable, and dominant ontology, but if the task we face is the truest universal understanding we can agree upon in a globalizing society, then specialization alone will not serve. Abraham Maslow illustrates the point with the following quote:

"I remember seeing an elaborate and complicated automatic washing machine for automobiles that did a beautiful job of washing them. But it could do only that, and everything else that got into its clutches was treated as if it were an automobile to be washed. I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail (1966, p. 15)."

We should expect at the outset that theoretical harmony is challenging cognitively and emotionally. In order to achieve functional unification of traditionally differing schools of thought, a shift must occur from an adversarial approach to one in which the value of integration is salient. We then are faced with the question of *how* to resolve this dilemma we have identified: that psychologists, like all humans, can only understand phenomena through expansion or redefinition of previously internalized belief systems.

At the time of this writing, psychology remains in a state of fragmented pluralism (Henriques, 2011), with no consensus on a macro theory that could meaningfully organize disconnected psychological research findings. Without a shared and foundational understanding, we are vulnerable as psychologists to existing within silos that lead to the creation of redundant knowledge systems, suppression of vital areas of understanding, and the competition for attention and other resources. In this manner, psychology can manifest as the imitation of the pursuit for cumulative knowledge, rather

than function as a coordinated progression towards a wiser view of the functional relationships between ourselves and the environment.

Henriques offers meta theoretical perspective designed to solve this problem of fragmentation (Henriques 2011). This frame, called the Unified Theory (UT) is comprised of four major tools: The Tree of Knowledge (ToK) System, Behavioral Investment Theory (BIT), the Influence Matrix (IM), and the Justification Hypothesis (JH). The UT is rooted in a philosophical and intellectual tradition of bridging false dichotomies and synthesizing dialectical tensions into integrated systems. Indeed, while the clinical and theoretical products that emerge from the UT are independently valuable (such as the Tripartite Model of Human Consciousness discussed later), perhaps the most promising aspect of the UT is its capacity to locate fragmented findings and modalities onto a map of our broader body of knowledge. When fact and theory are organized within this meta perspective, the social and emotional barriers to perceiving value are ameliorated, and the capacity to collaboratively define the scope and utility of ideas is enhanced exponentially. Though we are still limited by our biases and individual capacities to comprehend the natural world, the UT is a tool to help us organize the tools of others, and is theoretically inclusive by design. Thus, we are encouraged and equipped through a shared language to transcend the effects of factionalism in our pursuit of true phenomena.

As psychologists, we are dually relied upon to anchor human experience in the tradition of science, but also to appreciation the colorful variations of the individual human relationship with mystery. Our task is then to identify the insights of the major

theories in a way that respects the depth of dreaming while also maintaining accuracy of interpretation.

Chapter 1: Perspectives on Dreaming

As mentioned in the introduction to this work, there are voluminous opinions, theories, and methodologies regarding dreams. Below, will review five of the most influential perspectives on dreams so that we may later highlight their unique areas of strength, areas of overlap, and limitations of view. We will begin with the classic psychoanalytic view of Freud, and then transition into the perspective of Jung. From there we will review the physiological perspective, and then transition into an example of a contemporary emotional perspective. Finally, we will review the evolutionary perspective. Separate and unto themselves, each theory offers a rich view that is limited by the boundaries of an isolated perspective. From a broader view, one can see that each theory functions as part of a greater whole in the grander construct of dreams. To be able to see the forest for the trees, however, we must first review each perspective in order to better know how they work together in synergy.

The Psychoanalytic Perspective

In 1899, psychiatrist and mental health pioneer, Sigmund Freud published The Interpretation of Dreams, which outlines his theory of the function and mechanisms of human dreaming. Freud believed that human beings, through societal pressures and conditioning, repressed primal aggressive and sexual impulses that originated from earlier evolved drive-producing structures within the brain. He wrote that a human being perpetually constructs compromises between environmental forces versus his or her internal drives and motivations. He would later refine his theory and partition the human psyche into three structures: the *id*, *ego,* and *superego* (Demorest, 2005). The *id* represents the raw primal drives and impulses, the *ego* is the structure that allows an

individual to manage compromise between id and superego and the *superego* is one's internalized set of morals, rules, and values.

As one accumulates life experience, the ego becomes increasingly sophisticated in its ability to manage conflicts between the inner drives, outer barriers, and internally generated admonitions. For example, if a man were to be humiliated by a colleague, then potentially violent retaliatory impulses would flare within the psyche of this man that would be perilous for him to act upon. The man would be compelled, through some form of internalized anticipatory societal retribution, to inhibit the violent impulse that would be deemed inappropriate by the group collective. In other words, if he physically attacks his colleague, he anticipates punishment from other people, and he thus avoids the punishment by deciding not to attack. In this instance, the man's ego successfully manages the danger that would result from acting out that particular id impulse in a direct and linear form.

However, Freud also believed that even thinking and fantasizing about retaliation itself could activate the anxiety response of the superego, one's internalized sense of morality and conscience. The violent fantasy would then be inhibited due to self-censoring, and perhaps become ignored completely should the ego manage the conflict between id and superego by *repressing* the fantasy into unawareness. The problem with repression as Freud saw it was that the suppressed primal drives would still demand expression and influence over the individual's motives and actions. Neurotic, psychotic, and nervous conditions could develop as a result of the toxic build-up in tension between superego anxiety, ego exhaustion, and the id's intrusive primal impulses. Freud wrote that psychological well-being is experienced when the needs of these three psychic

structures are met through efficient inter-structure collaboration with one another rather than through convoluted use of ego defense mechanisms (like repression) or hedonistic anti-social excess (an uninhibited id). In the case of our individual who experienced the humiliation and subsequent urge for retaliation, a healthy response would be catharsis in the form of an action or experience that supplied a feeling of retribution without violating his internalized rules, and the rules of the collective, for acceptable and moral behavior.

Freud believed that dreams were one way that the ego achieved this safe expression of socially unacceptable wishes and desires that accrued throughout one's waking life. If we dream of retaliation against a close other, the wish is fulfilled through experience without risking waking-life environmental consequences. However, the wish, which would originate from the id, must also escape the judgment of the superego in order to achieve satisfactory expression. Much in the same way that a poet can more safely express controversial material through allegory, Freud wrote that dreams, through a process he called *the dreamwork*, disguised the pure form of an individual's wish into one that would be palatable to the judgmental superego. He labeled the disguised dream elements the *manifest content*, and the pure wish elements the *latent content*. The manifest content of a dream is what we see and read at face value and is confusing upon remembrance or retelling because the dream narrative and setting are often choppy and incoherent, and the dream characters can be fluid, composited, and amorphous.

There are two major dream-work mechanisms through which latent content is transformed into manifest content: *condensation* and *displacement*. Condensation occurs when multiple waking-life themes and memories are blended into single symbols, dream characters, and narratives. Dreaming of a character that resembles both your mother and

schoolteacher is an example of condensation. *Displacement* occurs when some form of latent content, whether that be a person, behavior, or abstract concept, is replaced by content that is tangentially associated with the original latent content. Rather than dream of aggressing against our friend Jack, we may instead dream of hunting a rabbit, or, rather, a *Jack* rabbit. In this example, the pure form of the retaliatory wish is displaced with an associative chain relevant enough to satisfy the id impulse and yet is *concealed* enough so as to be inoffensive to one's sense of moral identity. The more generalizable feature of displacement is that it also serves to create a concrete or pictorial image of an abstract concept. Freud notes that concrete objects are more resonant than abstract themes, and so displacing verbal concepts with readily associable physical manifestations could be a matter of efficiency. Ultimately, it was Freud's unequivocal belief that *wish fulfillment* was the foundational purpose of dreaming, and in his chapter on Dream Distortions, he explains that even anxiety dreams are, at their root, cleverly disguised enactments of a forbidden desire (Freud, 1976, p. 175). The forbidden desire, according to Freud, was *always* sexual or aggressive in nature.

Freud's signature technique for revealing the latent content of dreams was called *free association* (Freud, 1976). The foundational principle of psychoanalysis is that all behaviors and thoughts originate from activity in the nervous system, and that the nervous system is shaped by the synergy between drives and learned experiences. Any mental activity, therefore, has an antecedent in the associative web of neuronal activity formed through one's idiographic ontogeny. Dream content, therefore, is meaningful *because* it is reducible to firing patterns of neurons in the brain, because those firing patterns *must* reflect the dreamer's model of self and the world. The difficulty, then, is to

know how to track and interpret the content itself. Freud reasoned that because the mind organizes material into like categories, or what we would now in modern times call schemas (Beck, 1995), allowing the mind to wander freely into imagination when primed by any stimulus resulted in images and memories that revealed one's associative cluster around said stimulus. For example, each of us will think of something different when primed with the word "lunch." I instantly imagine a bologna sandwich with hot mustard, because this is what I most enjoyed for "lunch" when I was a 3-year-old child. If I allow my mind to wander further, the word "lunch" carries me to memories of my father putting the bologna on a paper plate and microwaving it. Our associative chains are unique to our personal experiences.

Freud applied this technique to the content of dreams and found that it gave him a track to exploring memories and experiences that he had forgotten or repressed from his conscious self. We will see examples of Freud's technique in detail when we review Freud's self-analysis of his famous dream, "Irma's Injection," as a test case for the Unified Theory in a later chapter. To offer a brief example of Freud's free association method, Freud once dreamed of a bearded man, and in the dream he felt great affection towards this man (Freud, 1976). Upon waking, however, Freud utilized his free association technique to reveal that this bearded man was a composite of three figures in his life: his uncle and two colleagues. At that point in his life, Freud had been nominated for an assistant professorship, but was preemptively resigned to being passed-over due to his denominational status as a Jew. The two peers that were part of the composite dream character had also been nominated for positions and either had failed to get them or were unlikely to get them. Freud described his uncle as a "simpleton" who had engaged in a

crime of finance and was punished for it. Ultimately, and, in greater detail than is relayed in this summary paragraph, Freud concluded that the composited character represented his wish that his peers were turned down for their positions based on conduct rather than on denominational status, as it would then give him a better chance at obtaining the position himself. However, each of Freud's analyses inevitably revolved around finding a linkage to repressed sexual and aggressive motives (Demorest, 2005), and this was one aspect of his theory that has been widely rejected by his students and the psychological community at large (Westen, 1998).

The Jungian Perspective

Carl Jung is remembered as the Swiss psychiatrist who founded analytical psychology, and he was greatly influenced by psychoanalysis before he famously broke away from Freud to pursue his own perspective (Demorest, 2005). To Jung, a dream was a fragment of involuntary psychic activity that penetrated into consciousness enough to be remembered. He noted that of all psychic phenomena, dreams may be the most irrational in their presentation, and are therefore most likely to be dismissed by individuals as meaningless. However, he held dream analysis as the central technique in working with one's unconscious collaboratively in order to achieve total psychic integration (Jung, 1945).

Jung differentiated himself from Freud on the topic of dream content and symbols (Jung, 1945). He wrote that the Freudians adopted a *causal* perspective of symbolism, whereas he himself believed in finality. The Freudians, he argued, believed that the symbols chosen by the dream work were an interchangeable disguise for the universal latent content of unexpressed sexual or aggressive desires. Such an approach could cause

an analyst to regard all oblong shapes as phallic representations, and all openings and round objects as disguises of female genitalia. Jung argued that the causal view of dream symbols is thus reductionist and subject to what we in modern times would call confirmation bias. The *final* perspective, by contrast, suggests that dream symbols mean something significant to each individual who dreams them, and so to change the symbol is to change the associative valence, and to change the associative valence is to change the experience, and to change the experience is to change the effect the dream will have on the individual.

Jung, like Freud, believed that no interpretation could take place without the dreamer, as words and symbols have many meanings that are personal to the dreamer. Jung illustrated this point by discussing the interpretation of a simple table. Even though we know the word "table," we do not know what the word "table" represents to the dreamer (Jung, 1945).

"For the thing we do not know is that this 'table' is the very one at which his father sat when he refused the dreamer all further financial help and threw him out of the house as a good-for-nothing. The polished surface of this table stares at him as a symbol of his lamentable worthlessness in his daytime consciousness as well as in his dreams at night (Jung, 1945, p. 71)."

Jung thus knew that objects have important personal associative charge in experiential consciousness. His preferred method for dream interpretation was called *taking up the context*, in which every meaning and association of the features in a dream are discovered and revealed by the dreamer him or herself. He thus presented himself as cautious of projecting his own content onto the idiographic associations of the dreamer,

whereas Freud would have sought to link the associations to a repressed sexual or aggressive wish. Jung thus rejected any further prescription for the treatment of dreams beyond a thorough taking up of the context, stating that even with considerable experience one should prepare for each dream interpretation as if one were about to encounter the unexpected (Jung, 1945). He also cautioned against an impulse to interpret the ultimate meaning of every dream, and claimed that there was value in simply exploring dream contexts due to their facilitation of the valuable recovery of insights, emotions, and aspects of self that had been neglected and dormant.

Jung wrote that dreams served a *compensatory* function due to the fact that dreams seemed to be in frequent opposition to the will and desire of the conscious self (Jung, 1945). This was evidence for Jung of the autonomy of the unconscious, for the unconscious seemed to have its own motive and function. If an individual exaggerated himself in some way that was too far removed from the true perceived reality of the situation, then the compensatory function of the dream would create a scenario in which the dreamer would have the necessary experience to correct towards balance. For example, if a man were to brag outwardly disproportionate to his actual competence, then he may have a dream in which he is made to feel inadequate. If we are in denial about our attraction towards another, we may dream of a scandalous union.

One last Jungian insight that distinguishes his interpretation significantly from Freud is Jung's belief in the prospective function of dreams (Jung, 1945). Jung believed that we as individuals strived to free ourselves from the painful limitations of our life's conditioning of the self. Our unconscious aspects of self, therefore, are in perpetual movement towards internal harmony and integration. The prospective dream function,

then, was his idea that dreams had not just a purpose to react to imminent challenges and threats, or to resurface material from the past, but to create experiences that could lead the self to converge as an individuated and integrated being (Khodarahimi, 2009).

Though both Jung and Freud each approached the study of dreams from the lens of their medical and scientific backgrounds, neither the psychoanalytic or analytic perspectives on dreams would be considered empirical (Rock, 2004). Neither used the experimental method, quantified their constructs, or connected their insights to a main body of psychological science. Instead, they both wrote down their own individual observations, and the observations of close colleagues, and created theories based upon subjective experience and intepretation. In the following section, we will review the physiological perspective on dreams, which is the systematic effort to utilize empirical methodology and technology to show replicable and quantifiable features of dreams.

The Physiological Perspective

Using the electroencephalogram (EEG), a device that measures electrical activity in targeted areas of the brain, sleep researchers have demonstrated five distinct phases of normal human sleep (Dement and Vaughan, 1999). The entry phase of sleep is called Stage 1, and is characterized by the transition from alpha brain waves into slower, longer theta waves. An individual woken up from Stage 1 sleep will likely not know that they had fallen asleep. Indeed, the stealthy nature of sleep onset is one of the reasons that driving a vehicle while sleep deprived is dangerous; drowsy drivers often unknowingly fall asleep briefly and repeatedly. After approximately 10 minutes of Stage 1, an individual will transition into Stage 2, which is characterized by the arrival of rapid bursts of sleep spindles on the EEG reading. Stage 3 is the transition into what is called deep,

slow wave sleep, and is marked by long, rolling brain waves mixed with theta waves. Stage 4 is essentially the completed transition into slow wave sleep, and lasts for approximately 30 minutes, and is a period of time where an individual is most difficult to wake up. These stages of sleep collectively are called non-REM sleep (NREM).

After this period of slow wave sleep, rapid-eye-movement (REM) sleep begins (Dement and Vaughan, 1999). This phase of sleep has also been described as "paradoxical sleep" because the brain transitions over a period of minutes from the slow waves of Stage 4 into a shorter, saw-toothed wave pattern that more resembles the beta and alpha activity seen in individuals who are awake. The dreams we popularly associate with rich narratives, vivid detail, and memorable experiences, and the dreams that are of interest to us in this manuscript, most often occur in REM sleep (Nielsen, 2000). During REM sleep, the body is paralyzed so that behaviors occurring in a dream are not acted out physically by the dreamer. Michel Jouvet (1967) showed this when he severed the area of a cat's brain that manages sleep paralysis and found that those cats, when dreaming, ran, leapt, attacked, and engaged in a host of other behaviors being dreamt about. The adaptive function of sleep paralysis is quite obvious, as thrashing about in one's sleep would be cause for serious injury—especially for creatures like cats that tended to sleep in trees. The notable exception to this paralysis is in the eyes, which are free to move about rapidly during REM sleep.

The first REM period of the night is brief and usually lasts less than five minutes (Dement and Vaughan, 1999). This concludes the first sleep cycle, which takes around 90 minutes to complete. An individual then transitions into NREM slow wave sleep and begins the cycle again. The first half of the night is mostly made up of NREM sleep, and

the second half is characterized by more frequent and lengthy periods of REM sleep that can last as long as an hour, with total sleep cycles lasting up to 120 minutes.

It should be noted that there remains no definitive understanding of the purpose and function of basic NREM sleep, but researchers are in agreement that reparative and restorative processes in regards to cellular maintenance and general homeostatic functioning occur during NREM sleep (Vyazovskiy and Delogu, 2014; Dement and Vaughan, 1999). From an evolutionary perspective, we can point to the energy efficiency of an organism resting during times in the day/night cycle that are disadvantageous for seeking resources and avoiding threats. For example, we humans are designed for diurnal activities, and so our vision is drastically impaired during the dark hours. It is therefore a significant waste of energy, and significantly more dangerous, to fool about in the wilderness in conditions that deprive our primary senses and survival capacities. Diurnal animals thus tend to find safe places to stay inert during the night to both conserve energy and to increase the chances of remaining undetected by nocturnal predators.

As for subjective experience of NREM sleep, it is rare that we remember anything from this stage of sleep, even if woken up and asked to recall what has just happened to us. In a study by Suzuki et al. (2004), dream reports from participants woken up during NREM sleep were less emotional, less remarkable, and less frequent (17.9% compared to 51.2%), than the dream reports of participants woken up during REM sleep. Indeed, NREM sleep mentation is usually only remembered as fragments of images, if remembered at all. Though there is not a definitive dichotomy of dreaming versus not dreaming in REM sleep versus NREM sleep respectively, there are clear differences in

the phenomena delineated by the changes in physiology and subjective experience as we transition from slow-wave sleep into REM sleep.

So far, we have alluded to the bizarre content and scenarios of dreams in REM sleep, and that they are also paradoxically compelling and convincing. It is a universal feature of dreaming that we lose our ability to notice violations of the rational continuity of waking life (LaBerge and Rheingold, 1990). To demonstrate, I will share a dream I recorded in 2013:

I am traveling in the back of a chauffeured luxury town car with my professor. She and I are having a discussion (I do not remember what about) when I notice her cat, which has suddenly appeared in the seat between us, successfully uses a can-opener to open a can of cat food. I am impressed by the cat, and feel as though I must admit my error. I say with a deferential enthusiasm: "Wow, your cat can feed itself out of a can!" My professor appears amused, and corrects me by saying, "No, my cat would <u>never</u> eat food out of a can." I am puzzled, and look at the cat to confirm what I had just seen. The cat turns and gives me a look of annoyance, and then lifts its paw out of the can, revealing a spoon that it then uses to scoop food out of the can and into an elegant crystal serving bowl. I feel embarrassed by my ignorance and lack of class.

According to the standard definitions, this was a typical REM sleep dream (Hobson, Hong, and Friston 2014; Hartmann, 2004). I did not at any time think or feel that this was a dream, despite the presence of unusual and exaggerated scenarios. I was accepting of the most unbelievable aspects of this situation, and yet I was feeling intense emotions throughout. I did not feel the need to question why we were in a car, where we going, the sudden appearance of a cat, nor the impossible act of a cat using a can opener

and spoon. I did not even feel that the human-like look of annoyance was out of place. I was compelled instead by emotions related to concerns about my relational value and competence. The waking-life context for this dream was that I was a brand-new student in my doctoral program, and I had, upon learning that my professor believed in the superiority of cats, light heartedly argued the position that dogs were more intelligent. The following night I experienced the dream described above.

From an empirical positivist perspective, we would simply call the content of this dream delusional (Hobson, Hong, and Friston, 2014). Famous neurophysiological dream researcher Alan Hobson is perhaps the most influential anti-Freudian dream theorist of the 20th and 21st century, and popularized the idea that dream imagery is random and meaningless (Rock, 2004). It began when Hobson and McCarley (1977) discovered REM sleep was activated by electrical PGO waves emanating from the pons that then made their way into the visual centers and forebrain. The pons is a small neurological structure located on the brainstem, and because the brain stem is primitive in its evolutionary development, and is implicated in basic physiological processes (alertness, respiration, swallowing, etc), the discovery that REM sleep, and hence dreaming, originated from PGO waves in the pons was interpreted and popularized by Hobson as a fatal blow to the psychoanalytic perspective on dreams (Rock, 2004).

Since then, Hobson's views on the adaptive function of dreaming have evolved, and, as will be discussed later, he now believes that dreaming as a process plays an adaptive role in energy economics and consolidating memory to simulate future experiences (Hobson, Hong, and Friston, 2014). However, like many others approaching dreaming from the neurocognitive perspective, he remains skeptical that dream content

itself is anything but meaningless cognitive fragments (Revonsuo, 2000). For example, popular evolutionary and cognitive psychologist Stephen Pinker has said that dreams probably function as a screen saver, and that the content does not matter as long as certain brain areas are active (*Bering in Mind*, 2009).

Neuroimaging has nonetheless revealed important clues about the potential nature of dreaming and the reasons for why we experience dreams as emotionally compelling despite our waking life assessment that the content of dreams may be fantastical and illogical. While analysis of the specific pathways and sequences of neurological systems and structures during REM sleep are beyond the scope of this manuscript, there are generally agreed upon findings. For example, it has been show that the visual, emotional, and motor-coordination centers of the brain are hyperactive during dreaming as compared to regular waking or NREM sleep (Braun, et al., 1997; Nofzinger et al. 1997; Marquet et al., 2000). Therefore, what we feel in dreams is not only experienced quite vividly, it may even be experienced more acutely than in waking (Hartmann, 2010). Areas of the brain associated with memory and self-referential processing are also increased (Nofzinger et al., 1997; Ioannides, et al., 2009). In general, limbic system functioning has been found to be highly active during REM sleep. Meanwhile, specific executive functioning areas of the frontal cortex are *deactivated* during REM sleep relative to waking (Voss et al., 2009). Here we see a strong correlation between the reported phenomenological experience of dreams as emotionally potent and irrational, and the neurophysiological data showing that emotional centers of the brain are active during REM sleep dreaming. The executive areas of the brain believed to be central to rational thought, however, are inactive during REM sleep dreaming.

Contrary to normal REM sleep deactivation of executive function, *lucid dreaming* is a state of consciousness in which an individual can become self-conscious and aware that he or she is in a dream (LaBerge and Rheingold, 1990). While mystical traditions for thousands of years have employed dreams and lucid dreaming techniques for various purposes, modern investigations and refinements of the technique popularized by Stephen LaBerge indeed suggest lucid dreaming to be a genuine mental state. An individual who is lucid dreaming is suddenly activating a reflective self-consciousness within the dream, and not simply dreaming about being awake within a dream.

One of the early experiments conducted by LaBerge in the 1980's was based upon the anecdotal story of a sleeping man whose ocular EEG readings showed a steady "back and forth" motion while in REM sleep. His eyes were looking left, right, left, right, etc. When woken up and asked what he was dreaming about, the man said that he had dreamt of watching a tennis match. This prompted LaBerge to train his team of lucid dreamers to use eye signaling as a means of communicating to researchers in real-time within a dream, resulting in identical demonstrations of lucidity occurring in the lab (LaBerge et al., 1981). For example, lucid dreamers would be told to move their eyes in a specific pattern when they became lucid while sleeping, and then later verbally confirm that they had achieved lucidity. The EEG reports were then given to a judge who was unaware of when the verbal reports had occurred. Based on the physiological signals alone, in 24 trials the judge was able to identify lucidity 90% of the time.

It should be noted that there is a good reason Stephen LaBerge is one of the few researchers exploring lucid dreaming: it is extremely difficult to study in the lab. Lucid dreaming occurs rarely in individuals spontaneously, and even in dedicated practitioners,

lucid dreaming usually occurs only a few times a week (LaBerge and Rheingold, 1990). Lucidity a few times a week might be a satisfyingly high frequency for an individual practicing recreationally, but for a sleep research team that must pay participants and assistants, stay awake all night for several nights or weeks, and then meaningfully analyze voluminous data, three or four occurrences per week might easily seem like a shot in the dark. A team in 2009 recruited 20 undergraduate students to be trained in lucid dreaming and then physiologically studied their attempts to lucid dream in the lab (Voss, et al., 2009). Out of the 20 participants trained, 6 reported having lucid dreams 3-4 times per week. Of those 6 brought into the lab, only 3 were able to achieve lucidity, which was confirmed using LaBerge's eye signaling technique that matched unsolicited participant disclosure. The results showed that lucidity correlated with increased activity in the frontal cortex of the brain, supporting the theory that *portions of the brain associated with self-awareness, reflection, and cognition were coming back online during REM sleep.*

In 2012, an fMRI study captured and verified quality lucid dreaming in a single participant (Dresler et al., 2012). The fMRI revealed that during REM sleep the right dorsolateral prefrontal cortex, the area of the brain associated with executive function and metacognitive evaluation, became activated at the same times that the dreamer signaled lucidity with LaBerge's techniques. This finding was a tremendous triumph for lucid dream research, as it demonstrated that lucid dreaming is a real phenomenon linked to precise and predicted areas of brain activation.

Supporting the classic Freudian notion that dreams express suppressed content from waking life, research has shown that the dorsolateral prefrontal cortex (dlPFC) is

highly active when individuals are attempting to suppress unwanted thoughts in waking life (Mitchel et al., 2008). This is the same area of the brain that is deactivated during REM sleep and then *reactivated* during lucid dreaming (Dresler et al, 2015).

Dreaming and Emotions

Ernest Hartmann's Contemporary Theory of Dreaming states that dreams are a way for the mind to consolidate emotional content through pictorial images and metaphor (Hartmann, 2010). The purpose of this process is to help us adapt to future challenges and surprising, traumatic events. Dreaming, according to Hartmann, is a hyper-connective state in which emotional associations in the brain can be more easily consolidated than in waking life. In the dream state, connections made can be drawn from a broader and looser range of associative material. However, these associations are not made randomly, but are primed by the emotional activity of the dreamer. Hartmann suggested that the dream itself is the metaphorical expression of the dreamer's emotions, and that in dreams there is often a "Central Image" that depicts the power and intensity of the emotion.

Hartmann's favored example of a Central Image is the tidal wave dream. He reports that these dreams are common after an experience an overwhelming trauma, such as those of survivors of rape, attacks, and burning buildings (Hartmann, 1998; Hartmann et al., 2001). Rather than a dream about the literal event that induced the trauma, these individuals would dream of a Central Image like a tidal wave that would represent powerful emotions of terror and feeling overwhelmed. Other images and themes could include a whirlwind, torture, or being made to fall off a cliff (Hartmann, 2010).

For example, dreaming of a small wounded animal, or a lobster with its shell torn off, could represent the emotion of vulnerability (Hartmann, 2010). Survivor guilt could be represented by a dream of the individual dying in a fire while everyone else escapes. For sadness, the individual could dream of being in a barren, empty house with howling winds blowing through open windows. A woman whose mother had recently passed away dreamed of a large tree falling through the middle of her house. She reported that, in the dream, she and everyone were "all stunned" (Hartman, 2010, p. 3).

Hartmann's method for studying dreams was to train scorers to analyze volumes of dream reports. His studies of the Central Image included having scorers, whom knew nothing of the dreamer or dream context, independently identity the Central Image, identify the emotion it represented, and label the intensity of the emotion as it was represented. In conducting this research, Hartmann found that there was an identifiable Central Image in 50-60% of dreams (Hartmann et al., 2001). When compared to reports of day-dreams, dreams were reported as having a higher Central Image intensity (Hartmann et al., 2001). Dream scorers were given a list of 18 emotions to choose from, and the highest interrater reliability between scorers was for emotions of fear and terror (Hartman et al., 2001). Central Image intensity was found to be highest in dreams that were considered important to the dreamer rather than simply dreams from the same dreamers (Hartmann et al., 2001a; Hartmann et al., 2006). It was also found that Central Image intensity was higher in individuals who reported experiencing a recent trauma than those who had not (Hartmann et al., 1998; Hartmann et al., 2001). To test this further, Hartmann collected 880 dreams from 44 participants (Hartmann and Brezler, 2006), and compared the content of the 10 dreams before and the 10 dreams after the terrorist attacks

of 9/11/01. Overall, Hartmann found that Central Image intensity was significantly higher in dreams after 9/11 than before. Hartmann concluded that, based upon his empirical studies of dream reports, the Central Image intensity increases in dreams after traumatic and emotionally stressful events (Hartmann, 2010).

Another relevant finding from Hartmann's analysis of dream reports is that dreamers rarely report having dreams about reading, writing, or math (Hartmann, 1996). In 456 dreams, Hartmann and his scorers found zero instances of reading or writing, and only one instance of a dreamer reporting doing math at a desk. However, even in this single case the actual mathematical symbols and calculations were not a part of the dream. Then, in a multiple-choice survey completed by 240 participants, 90% reported that they "never" or "almost never" wrote, read, or performed math in their dreams. Hartmann concluded from these results that REM sleep and dreaming is a primarily emotion-driven enterprise. From an evolutionary perspective, we can observe that REM sleep evolved at a time when our mammalian ancestors were not engaged in reading, writing, and calculative tasks (Revonsuo, 2000).

Hartmann also quantitatively studied differences in daydreaming and dreaming when correlated with the construct of psychological boundaries. A group of 40 students were asked to provide a written report of one recent dream and one recent daydream. These dreams were scored on how "dreamlike" and "bizarre" they were by blind scorers. The students were also given the Boundary Questionnaire, which measures how thick or thin an individual's psychological boundaries are. For example, Hartmann describes individuals with thick boundaries as more likely view the world in separate compartments, such as black and white, and right or wrong. They are more likely to view

men as totally different than women, themselves as totally awake or asleep, and try to not allow emotions to interfere with thinking (Hartmann, 2010). Hartmann describes individuals with thin boundaries as more likely to see the world in shades of grey, experience liminality, recognize both the feminine and masculine in self, and see similarities between groups. The results showed that, overall, dreams were scored as more "dreamlike" and "bizarre" than daydreams. As expected, the dreams of thin-boundaried individuals were more "dreamlike" and "bizarre" than the dreams of thick-boundaried individuals. This effect was so significant that even the *daydreams* of thin-boundaried individuals were ranked as more dreamlike and bizarre than the *dreams* of thick-boundaried individuals (Kunzendorf, et al. 1997). Hartmann concludes that as we drift towards daydreaming, and eventually to dreaming, the mind increasingly seeks to make associations and connections based upon emotion rather than semantic, rational categorization (Hartmann, 2010).

We may also consider this research in light of the fact that there are some dream researchers that seem to intuitively gravitate towards the emotional logic of the phenomenological aspects of dreaming (Jung, 1945; Hartmann, 2010; LaBerge and Rheingold, 1990), whereas others intuitively believe that the content of dreams is delusional (Hobson, Hong, and Friston, 2014).

The Evolutionary Perspective

For dreaming to have an inherent function at the neurocognitive level, it must, in some way, have worked to foster ancestral survival and reproductive success (Lieberman, Tooby and Cosmides, 2007). In 1985, neuropsychologist and engineer Jonathan Winson proposed an ethological model of dreaming. REM sleep, he argued, evolved through

natural selection as a means for mammals and birds to organize increased informational complexity into predictive models for navigating the environment. A major catalyst for his approach was the emerging fact that reptiles do not experience REM sleep, whereas, with the exception of the echidna, *all tested land mammals and birds do* (Siegel, 2008). Reptiles, when compared to mammals, are slower learners and thus less adaptable to novel environmental problems (Tudge, 2000). They are also less dependent on maternal nurturance and nuanced social reciprocity to survive and thrive. Thus, the differences between reptile and mammal key to Winson's hypothesis are 1) increased behavioral plasticity, and 2), the biological development of advanced emotional and memory centers of the brain.

That we can correlate the arrival of complex neurological structures responsible for the expansion of emotional, social, and learning processes with the arrival of a new form of sleeping and dreaming was suggestive to Winson that REM sleep was involved in the processing of information. Moreover, Winson points out that the echidna is classified as a monotreme, and can be viewed as an example of an evolutionary intermediary between reptile and mammal. The echidna differs neurologically from normal mammals in that it possesses a large and convoluted prefrontal cortex. This is a brain structure that plays important roles in the regulation of the relationship between imaginative thought, memory, and emotional impulses (Panksepp, 1998). Though the echidna has been shown to produce activity in its pons during sleep, the electrical activity itself is more like that seen in reptiles (Siegel, 2008). Thus, Winson argued that one evolutionary strategy for dealing with the increased need for information consolidation

was to expand real-time simulative thought capacity, and he argues that the echidna did just this by using its oversized prefrontal cortex.

He further proposed that, by contrast, our mammalian ancestors adopted a different strategy by processing the increased informational complexity *during sleep.* The ubiquitous presence of REM sleep among mammals and birds, and the absence of other echidna-like lineages, further suggests that REM sleep was a critically favored evolutionary solution to the information-management problem brought about by increased perceptual complexity and behavioral plasticity. Though we as humans have a large prefrontal cortex that we use to simulate outcomes in imaginative thought, Winson (1985) writes that if our own cortex had evolved in the same proportions as that of the echidna, we would need a wheelbarrow to carry it around due to the enormous volume.

Antti Revonsuo proposed that the adaptive function of REM sleep was purely for threat simulation (Revonsuo, 2000). He wrote that dream experience is organized in such a way as to selectively simulate our perceptual world, and that the simulation itself is specialized to rehearse adaptive responses to threatening events. Revonsuo cites research that shows that 80% of our dream experiences are negative, and only 20% are positive (Hall and Van de castle, 1966), with "apprehension" accounting for 50% of self-reported negative emotion in dreams. Further, in children's dreams, Domhoff (1996) analyzed 600 dream reports that showed that animals represented 25-30% of all dream characters in children age 2-6, whereas animals appear in adult dreams at rate of only 5%. He reports that Foulkes (1982b) found similar results when studying the dreams of children, with animals appearing in 30-45% of children at 3-7 years of age. Revonsuo makes the argument that children are the least likely to have been conditioned to adapt to a modern

environment devoid of the interdependent ecological relationship humans originally evolved to survive in. Therefore, the fact that they dream about animals more than adults is potentially indicative of the designed purpose of REM sleep. Revonsuo continues by citing dream report research by Robbins and Houshi (1983), which showed that university students who had recurrent dreams most often dreamed of being pursued by wild animals, monsters, or robbers, or were threatened by natural events such as storms, fires, and foods. Dreamers most often reported trying hide, watch, or run away.

Revonsuo reviews a paper that examined the dreams of the Mehinaku Indians in Central Brazil, who remained a traditional hunter-gatherer society at the time of the study (Gregor, 1981). Gregor collected 385 dreams from 18 men and 18 women, and found that 55% of men's dreams and 42% of women's dreams contained anxiety. The primary source of anxiety in dreams for Mehinaku men and women were animal dreams, which accounted for 30% of the anxiety in all recorded dreams. Overall, 60% of dream content contained a threatening element, and 20% were scored as peaceful activities (Gregor, 1981). Revonsuo argues that the selective overrepresentation of threatening experience in dreams relative their presence in waking experience is evidence that REM sleep dreaming evolved as threat simulator.

However, when we are not presented with threats that resemble the environmental concerns our ancient ancestors faced, such as wild animals, natural disasters, and invasive predatory males, Revonsuo argues that the idle threat simulator will pick up on the most threatening aspects of our current concerns and weave those into dream material. Overall, Winson's model of dreaming differs from Revonsuo's in that Winson viewed REM sleep and dreaming has having evolved to integrate past and present behavior

generally, whereas Revonsuo believes that REM sleep evolved exclusively for the purpose of simulating responses to threats. Revonsuo further makes the claim that dream interpretation is an invented function, and not the original developed purpose of REM sleep in human beings. However, in Revonsuo's review of Gregor's study of the Mahinaku people, he does not mention that the Mahinaku awoke every morning and tell each other their dreams, had an elaborate system for interpreting the symbols of their dreams, and believed that their dreams predicted future events (Gregor, 1981).

Chapter 2: Overview of Unified Theory

The diverse perspectives and largely disconnected perspectives on dreaming are consistent with the claim that psychology exists in a state of fragmented pluralism (Henriques; 2011; Henriques, 2003). In his 2003 article, The Tree of Knowledge System and the Theoretical Unification of Psychology, Henriques highlights the urgent need for a shared, systemized language for the field. After reviewing previous attempts at unification, Henriques offers a novel systematic approach to organizing human knowledge. He argues that, without a principle-based meta-frame that can orient our data and theories, psychology will continue to lack the cumulative and collaborative qualities found in scientific disciplines such as physics, chemistry, and biology. For example, biology is unified through the modern synthesis of the theory of natural selection and the science of genetics (Mayr and Provine, 1998), and this shared understanding of natural selection and genetics becomes the baseline from which all past and future research is integrated and interpreted. Henriques' Unified Theory (UT) synthesizes historically siloed psychological theories and phenomena into cohesive, principle-based systems. The UT then locates these systems on a broader map of human knowledge.

Henriques' method of integration is multi-layered, inclusive, and comprehensive. The beginning assumption of the Unified Theory (UT) is that the competition between the schools of psychology is misguided to begin with. Instead, Henriques argues that the major theoretical perspectives each operationalize a part of a broader construct of reality, and that the issue has been the limited scope of the cartography of the total informational terrain. This concept is expressed via analogy in the parable of the blind men and the elephant (Henriques, 2011). In this ancient Hindu

teaching, there are several blind men attempting to describe to each other what an elephant is by only the limited parts of the elephant they are touching in the moment. One man describes the elephant as like a snake, for he his holding the trunk. Another man describes the elephant as like a tree, for he is feeling a leg. Another describes the elephant as like a wall, for he is pressed against its broad and flat body. The listener of the parable is painfully aware that if only each could see the full gestalt, the confusion would vanish. Each blind man would recognize that he was correct in his observations, but incorrect in the limited interpretation.

Our sampling of psychological perspectives on dreaming demonstrates variety in both conceptualization and methodology. At this point, the reader may have resonated with particular perspective based upon the reader's personality, training, and worldview. The psychoanalytic perspective presents dream interpretation as though it is the investigation of a labyrinth comprised of puzzle boxes, mazes, and locked doors. Once decoded, mapped, and unlocked, the content of dreams can be utilized by the conscious self to achieve liberation from maladaptive trauma and distorted perceptions (Freud, 1976; Jung, 1945). Then there is the physiological perspective, wherein the answers to dreaming are found through correlating self-reported phenomenon with electrical activity in the brain measured with imaging equipment. From this perspective, dream content could simply be random mentation generated as a byproduct of some consolidation or homeostatic process that occurs during REM sleep (Hobson, Wong, and Friston, 2014). The emotional processing perspective is perhaps the measured middle-ground of the previous two views, with Ernest Hartmann suggesting that dreams function to reconcile old emotional memories with new emotional

experiences (Hartmann, 2010). Finally, there is the evolutionary perspective, which highlights that the phylogenetic arrival of REM sleep correlates with the development of neurological structures associated with advanced learning and socio-emotional processing (Siegel, 2008; Winson, 1985).

A significant challenge in determining the validity of any theory on dreams is separating idiographic features of dreaming from foundational and universal pillars of human nature. Otherwise, our ideas about our dreams will float within an isolated island of cultural subjectivity that unapproachable without the shared assumptions of folk wisdom and intuition (the very constructs that the empirical method endeavors to factor out). Unless anchored to a body of contiguous knowledge, such an island of experience would be primed for erosion in the same way that fashion trends fade with the changing of seasons. From this perspective, a book that simply lists the meaning of dream content would be fraught with error. Our personal experiences and cultural programming make it so that we could all have a dream about a "table" and it would mean something different to each of us (Jung, 1945). At the same time, the dream process itself may have dynamic universal features that can be discerned and utilized effectively.

Because the UT is a tool that assimilates psychological theory and phenomena, we should be able to use test the UT lens for its ability harmonize a traditionally fragmented psychological construct like dreaming. A brief overview of major components of the Unified Theory is reviewed in the following sections: The Tree of Knowledge (ToK) System, Behavioral Investment Theory (BIT), the Influence Matrix (IM), and the Justification Hypothesis (JH). These components will then each be used to analyze and integrate the dream literature reviewed in the previous chapter.

Tree of Knowledge System

The Tree of Knowledge (ToK) System is a map that charts our scientific understanding of emerging behavioral complexity across time (See Figure 1). Though other models have represented the contiguous evolutionary span from atoms to human beings (Wilson, 1998), the ToK emphasizes that emergent complexity can be divided into four distinct phases. These phases depict the transition of energy into matter, matter into life, life into mind, and mind into culture. Each of these phases (Matter, Life, Mind, and Culture), corresponds to a field of scientific study (Physical Sciences, Biology, Psychology, and Social Science, respectively), and are separated by *joint points* that describe the novel features required for leaps into higher tiers of complexity.

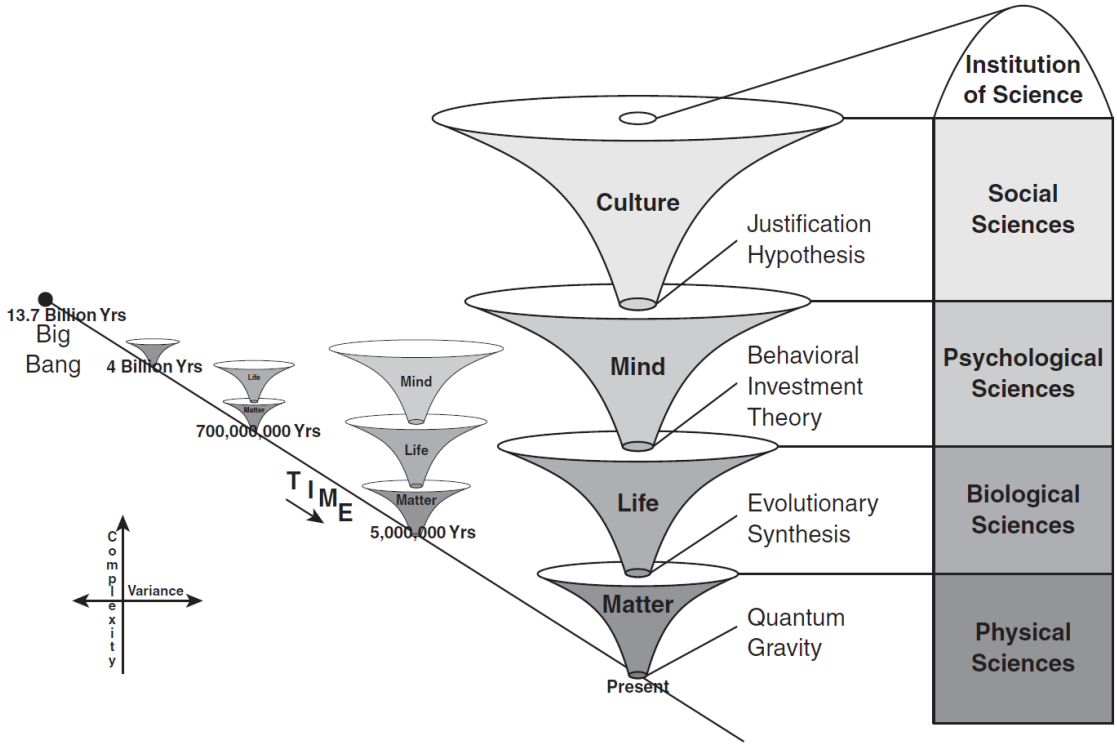

Figure 1. The Tree of Knowledge System

The first phase, Matter, is the level with which the physical elements of the Universe behave and interact. The physical sciences, such as chemistry and physics, are the fields that study and explain the trends, theories, and laws pertaining to non-living physical processes. The behavior of particles, asteroids, and chemical reactions are all examples of the non-living domain of Matter. The way in which deep wells of energy are gathered due to gravity, stones line up on the shore of a beach according to weight, and gasses blanket a planet to create an atmosphere, speak to the consistent relationships that form between non-living physical forces due to their characteristics and properties. All biological and psychological complexity is built upon and in constant relationship with this domain. In his book *The Blind Watchmaker*, Richard Dawkins (1986) makes this point by explaining that birds do not "defy" gravity by flying, but are instead in exceptional *harmony* with the laws of physics in such a way that allows to birds to masterfully lift away from the ground. When molecules formed structures that eventually began to self-replicate, these structures entered into a new domain of complexity: Life.

The joint point between Matter and Life is the Evolutionary Synthesis. Genetic code is the instruction booklet by which lifeforms are built and then commanded to behave. Due to slight variations in the instruction booklets that occur occasionally due to copying errors when organisms reproduce, the new instruction booklets compete with the old ones for reproductive success. If the copying error results in an organism that better adapts to the environment, that genetic code is naturally kept around and proliferated more effectively than the old genetic code, and thus organisms change over time to meet the demands of what is also a changing environment through the natural selection of genetic instruction booklets that work better in the environment. This process is slow,

however, and does not by itself allow for an organism to adapt to the environment once it is born.

The evolution of the nervous system gave rise to the third dimension of complexity: Mind. Animals with nervous systems are able to react to their environment through utilization of mental behaviors. Jellyfish reacting to prey, a cat leaping upon a mouse, and crows solving a multi-step puzzle, all three examples of sets of mental behaviors mediated by the nervous system.

The fourth dimension of complexity is Culture, which refers to the set of sociolinguistic behaviors developed by human beings. An individual using language or symbols to justify his or her actions to another person, a cave painting in Altamira, and the political machinations of large nation-states are all examples of complexity that fall within the domain Culture.

While each domain of complexity on the ToK plays an important role in the function of dreams, we will turn now to the joint point between Life and Mind in order to begin our Unified Theory assessment of dreams and also to continue our review of the major components that make up the UT system.

Behavioral Investment Theory

Behavioral Investment Theory is the joint point between the domains of Life and Mind on the ToK (Henriques, 2011), and systematizes the ways in which the evolutionary synthesis extended and evolved into a new domain of complexity we associate with animals that possess a nervous system. In the framing provided by the UT, the mind is a behavioral investment system that operates on the same principle of natural selection but allows the organism change their behaviors according to the feedback they

receive from the environment (see Redish). The organizing principle behind whether or not a behavior is regarded as "good" versus "bad" is a calculation of the cost of energy in exercising the behavior against the potential energy reward. This is why it is called behavioral *investment*, because by engaging in any behavior the organism is losing energy in the estimation of receiving more in return. If behaviors were not tightly linked to this calculating investment system, any creature would perish imminently either from starvation from excess behavior, starvation from too little action, and poorly calculated responses to predator threats. Thus an animal's foundational goal, from which all others are built, is to avoid entropy and maintain autonomy as a closed-loop energy investing entity.

The six key principles that comprise BIT (*energy economics, evolutionary, behavioral genetics, computational control, learning,* and *development*) together create The Architecture of the Human Mind (see Figure 4), which is a model that delineates the human mind into four levels processing: sensory-motor, operant, cognitive, and self-consciousness (Henriques, 2011). For reference of our location on the Tree of Knowledge (see Figure 4), level's 1 - 3 exist within the domain of Mind, and level 4 passes into the domain of Culture.

Within the early beginnings of the domain of Mind, autonomic reflexes, like those found in jellyfish and flatworms, are the foundations of our own nervous system (Henriques, 2011). From a soft modularity view (Geary, 2005), these processes are largely "hard wired" due to their early evolutionary formation and their essentialness to functionality. For example, touching a hot stove will cause a reflexive recoil away from

the dangerous stimulus. This avoidance reaction is automatic, occurring before we have had any time to reflect consciously on the pain or what should be done about it.

At level 2, the operant experiential level describes the principle-based mechanistic action of behavioral plasticity (Henriques, 2011). Behaviors at the operant level of complexity are more complex, malleable, and dynamic than the reactive behaviors that occur at the sensory motor level. While the traditional Skinnerian behavioral equation is modeled solely around consequences and observable responses, Henriques' formula for operant behavior includes the motivated goal state of the animal, and the role of emotions in guiding the animal responses to stimuli.

The resulting operant-level equation is P - M => E, where "P" refers to perception, "M" to motivation, and "E" to emotion. This means "*perception of an actual state relative to a motivational state leads to an emotional state* (Henriques, 2011, p. 74)." Animals that possess operant level processing perceive their environment through the integration of sensory inputs into meaningful representations. These representations are referenced against the motivational goal state of the animal. At a basic level, these motivational goal states are templates that exist in two broad categories: *seek and approach* and *avoid and withdraw from.* Evolutionary processes sculpt the basic frames for motivational templates, and then an animal's learned experiences elaborate upon and nuance them.

Emotions, "E" in the equation, are designed to organize the animal's response set in order to reduce the discrepancy between an animal's perceived state of being and its desired motivational goal state (Henriques, 2011). Reduction of a discrepancy between perceptions and an approach goal state elicits a positive emotional state like satisfaction

and joy. Increasing the discrepancy between perceptions and an aversive state also elicits positive emotional states, but they are associated more with affect related to relief. Concordantly, decreasing the discrepancy between perception and aversive states will elicit affect such as pain and fear. Lastly, increasing the discrepancy between perception and desired goal states elicits affect related to frustration. Neurobiological research suggests that mammals and birds experience virtually the same primary emotions as we humans (Panksepp, 1998). For example, Panksepp has shown through neurological mapping that birds and mammals experience the emotions of seeking, rage, fear, lust, care, panic, and play. Emotions, then, are the electrical waves generated by the nervous system in response to the organism's perceived environment-self situation, and they cause the animal to behave in ways that orient the animal towards its desired goal states.

If a cat is thirsty and drinks water successfully from a birdbath in a neighbor's backyard, the cat experiences the positive emotions of satiation paired with the presence of the birdbath. The next time the cat is thirsty and nearby, it will feel experientially guided towards the birdbath as a low-investment high-return option for satiating thirst. If the cat successfully drinks from the birdbath time after time, eventually a habit may form. However, if the neighbor's loud and aggressive dog is let outside one day while the cat is attempting to poach water, the cat's fear and terror response will be paired with the environmental stimuli related to the bird-bath and yard. The cat's behavioral investment system now has a competing affective signal to consider when it is time for the cat to satiate thirst. Should it find a new source of water altogether? Is it worth the risk to try again? The felt fear that the cat re-experiences when approaching the site of the surprise dog attack will be weighed against previous successful satiation attempts,

and the cat may avoid the yard altogether (or perhaps still approach, but this time more cautiously). Either way, the emotions the cat experiences guide it towards a best decision given the new information about the environment the cat has internalized and assimilated.

We relate P – M => E directly to dreaming by asking the question: "*how* does this cat organize the accumulation of experiences relative to the birdbath and the dog?" The point of behavioral plasticity from the vantage point of the ToK and BIT is that experiential consciousness allows the individual animal to more effectively calculate behavioral expenditures that will provide worthwhile energy investment returns. In other words, if we can remember that the yard with the birdbath is no longer a safe source of water, then we have an advantage in navigating the present environmental situation. Our body has retained a library of past experiences that can be cross-referenced to create a better representation of the environment in relation to our motivational goal states associated with survival and reproduction. The operant experiential level of consciousness is thus dominated by the pairing of sensory-motor perceptions with their learned associations to motivational goal states. Emotions spark us toward the appropriate actions. However, by what process does the mind prioritize the massive accrual of learned responses and experiences?

REM sleep evolved at the same time as the limbic system, which is the set of neurological structures believed to be associated with the evolutionary arrival of operant experiential processing (Winson, 1985; Siegel, 2008; Henriques, 2011), dreams are notorious for their lack of rational coherence, but are known instead for their emotional and metaphorical coherence (Freud, 1976; Jung, 1945; Hartmann, 2010; Symes, 2015). Dream reports also show that we are more likely, especially as children, to dream

disproportionately of the animal and environmental threats associated with the challenges faced by hunter-gather societies (Revonsuo, 2000; Gregor, 1981; Hartmann, 2000). Finally, neurologically it is shown that REM sleep paralyzes the body, gates our consciousness from perceiving the external environment, and all the while activates motor and emotional centers of the brain (Braun, et al., 1997; Nofzinger et al. 1997; Marquet et al., 2000). Taken together, BIT supports research and theory suggesting that dreaming has much to do with the management of operant experiential processing.

Further clues can be derived from examining the progression of level 2 to level 3 processing in the architecture of the human mind (see Figure). Imaginative thought is the ability to simulate outcomes in working memory (Henriques, 2011). The ability to solve problems in the mind is both safer and more energy efficient than physical trial and error. Winson's hypothesis of dreaming is based partly on the fact that the echidna, an evolutionary intermediary between reptile and mammal, uniquely forewent REM sleep and instead developed a disproportionately large frontal cortex (Winson, 1985). Using its enlarged cortex, the echidna is thought to consolidate memory "on the go" during waking hours rather than during sleep. The echidna strategy, however, is an evolutionary dead-end, whereas the REM sleep strategy was adopted by all tested land mammals and birds, including our own ancestors (Siegel, 2008). It is therefore consistent also consistent BIT that REM sleep was a form of proto-imaginative thought that dealt specifically with the adjustment, organization, and consolidation of experiential memory. These updates to experiential consciousness could occur more efficiently during sleep than during waking hours when an animal would need to focus its awareness on the threats and opportunities

of the immediate environment. This premise will be explored more in a later section discussing the Somatic Marker Hypothesis (Damasio, 1995).

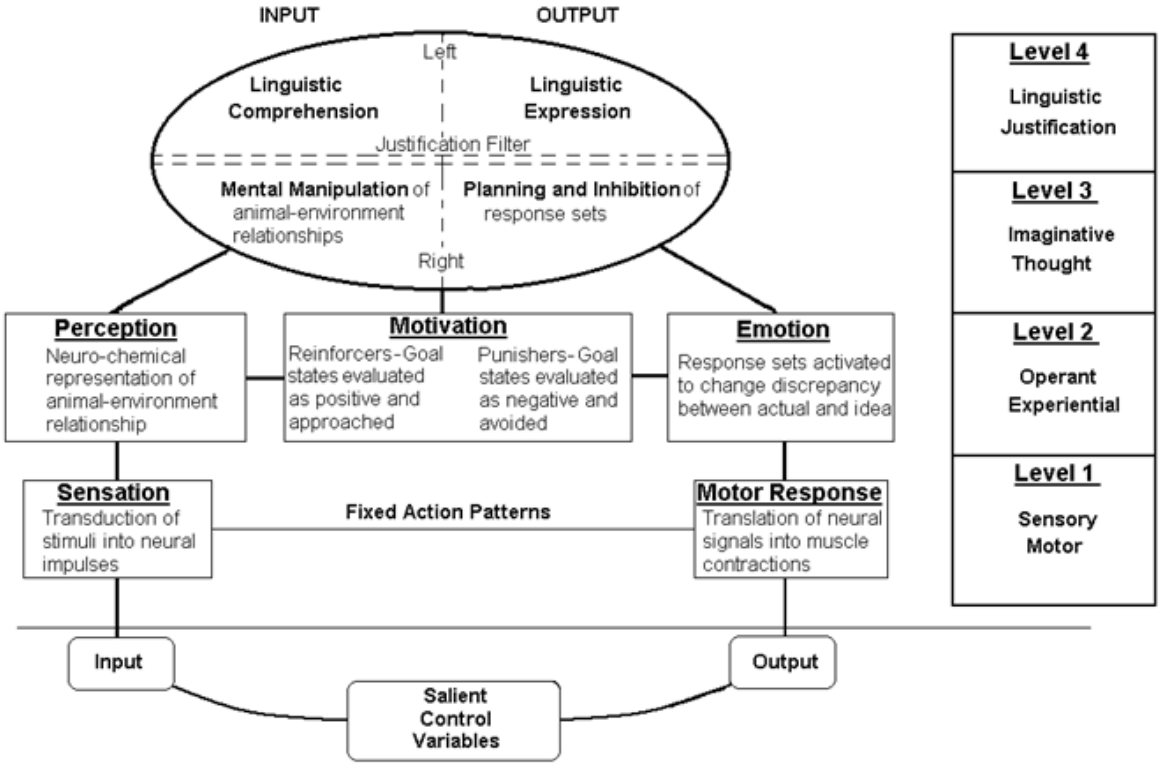

Figure 2. The Architecture of the Human Mind

The Influence Matrix

Social dynamics are also of key importance to an understanding of dream content. Species that have evolved to be particularly socially cooperative, such as mammals and birds, are rewarded by relational value (Henriques, 2011). When we affirm a dog by saying "good boy," the dog experiences reward because he is carefully tracking his relationship with us. This is because good relationships are linked to security, cooperative companionship, and resources, whereas bad relationships result in potential abandonment or death. The refined tracking and expression of social behaviors becomes

even more paramount at the ape level of evolution, and much cognitive effort is expended at the individual level managing the relational dynamics of the tribe (de Waal, 2006). When survival of the individual becomes linked directly to his or her relationship to the tribe, the investment in politics and social interaction becomes an integrated and compelling aspect of the core behavioral investment system.

The Influence Matrix (IM) is a 3-dimensional model that represents this extension of BIT and P – M => E into the socio-affective navigational system of human beings (Henriques, 2011). The IM is based upon Timothy Leary's Interpersonal Circumplex model (1957), which categorized relational styles on two dimensions: hostile – friendly, and dominant – submissive. The Influence Matrix adds the dimension of autonomy – dependence, and also the superordinate dimension of relational value (see Figure 3). This means that seeking high autonomy, affiliation, and dominance, while inherently desirable, is subservient to the acquisition and maintenance of relational value. Our personalities can form around a preferred location on the Influence Matrix while also having the capacity to adjust strategies due to environmental situations. For example, an individually may generally be commanding and dominant in the workplace, and then also be submissive and dependent romantically. Individuals thus have a general climate of

personality in this domain that is also subject to weather-like changes.

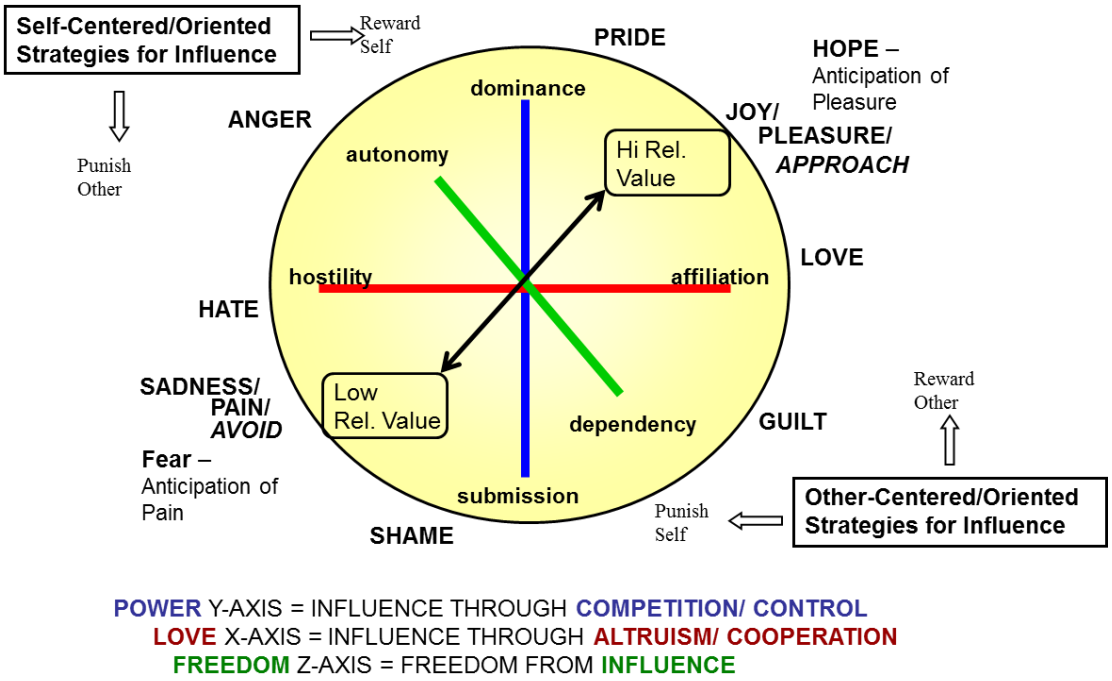

Figure 3. The Influence Matrix

Relational theory is important in our UT conceptualization of dreams, because the evolutionary theorists and neurobiologists offer little or no insight into the fact that many of our dreams involve interactions with other people (Jung, 1945). The fact that dream content includes important material related to relationships should be no surprise to humanistic or psychodynamic practitioners, as both modalities recognize that our interactions and attachments with other people are of extreme importance to our quality of life and survival. Even people that are inherently averse to intimacy must develop strategies to effectively manage others and behave in ways deemed appropriate, or else they may face existential consequences from violating norms and social boundaries.

As we analyze dreams in the upcoming integrative section, we will apply the IM to show that relational positioning is compellingly operative in dreams that feature

important others. Indeed, we will argue that the IM offers a way to meaningfully interpret dreams in a way that provides a balance between depth and objectivity.

The Justification Hypothesis

The Justification Hypothesis (JH) is the fourth piece of the UT framework and serves as the joint point between the domain of Mind and Culture on the ToK (Henriques, 2011). It is also represented in the fourth level of information processing in the Architecture of the Human Mind (see Figure 2). In the previous sections, we have explored the theory of emotion organized by BIT, and introduced the connection that dreams may be logically irrational because they function at the operant experiential level of information processing. Here we will introduce the JH in order to segue into the Tripartite Model of Human Consciousness, which may shed further light on the opaque relationship between our rational self and dream content.

The foundational assertion of the JH is that the ability to share information quickly using symbolic language allowed human beings to more effectively navigate the environment, coordinate group efforts, and manage relational value. An issue arises, however, when the ability to share one's experience leads to exchanges that others find repellant or threatening. As human beings began to ask one another to explain the motives and reasoning behind actions and demands, individuals whom could craft the best narratives were sexually selected for. The JH suggests that when an individual possesses motives and values that contrast with those of the larger group, then the individual is pressured to hide that information for fear of retaliation or rejection. Lying, obfuscating, minimizing, rationalizing, and omitting are a few examples of the ways in

which the raw experiential truth of the speaker is altered in order to guide a social situation in the direction of the individual's personal needs.

This need to justify ourselves to others led to the fragmentation of consciousness into three broad domains: an *experiential self, a private self and a public self* (Henriques, 2003). As diagrammed in Henrique's Tripartite Model of Human Consciousness (see Figure 4), Freudian and humanistic insights were integrated to show the relationship between domains of consciousness, and the filters between them The first domain is the experiential self, which is comprised of our raw sensations, perceptions, feelings, and desires. The second domain is the private self, which refers to the inner narrator that processes reality through a language-based medium. Our private and experiential selves are separated by the Freudian filter, which edits what information from the experiential self is allowed to be recognized and processed by the private self.

When information from the experiential self has passed through the Freudian filter and entered private self-consciousness, it can then pass through the Rogerian filter where it manifests as our public self. The public self is how we communicate ourselves to others. It is the expression of our persona and efforts at impression management. When the motives of the experiential self consistently align with the expectations and collective justification systems of the group, an individual can enjoy an "unfiltered" existence in which relational value is gained and maintained at minimal energy cost, and where expectations and rewards are predictable.

One of the themes that should emerge as salient is the critical role of the Freudian filter in shaping our relationship with dreams. Indeed, that dreams are a perceptual doorway directly into experiential consciousness is the foundational basis of analytic

theory and technique (Jung, 1945), and the origin of Freud's famous belief that dreams are the royal road to the unconscious processes that influence our lives (Freud, 1976). Essentially, there is significant emotional activity occurring at the operant experiential level of processing that is not integrated into the justification level of awareness. Surrounding us at this moment are objects that carry with them a long history of learned associations, but we are automatically filtering those in or out of consciousness based upon their relevance to our current motivated goal state. Freud's free association technique encourages imaginative thought to freely conjure images that are evoked in the presence of a targeted stimulus. If I stare at the can of orange soda in front of me and allow my mind to wander, I see and re-experience images of drinking orange soda with my grandfather, who was a big fan of orange soda. In this way, I am allowing experiential content to pass through the Freudian filter and into my private self-consciousness. There the images are transformed into a linguistic narrative that I then convey to you, the reader, by transmitting the information through the Rogerian filter by typing it out now.

However, what if the associations led me to painful or shameful images and memories? I might then use my prefrontal cortex to inhibit my awareness of the unwanted thoughts and feelings, which would be an act of repression. Or, if the memories were embarrassing or shameful, I could inhibit myself from sharing them with others in an attempt to maintain a justifiable presentation. Indeed, the classic defense mechanisms discussed by Freud can be viewed as expressions of the underlying cooperation between the mechanisms of inhibition and justification (Henriques, 2003).

What we are left with in dreaming then, is the deactivation of the part of the brain associative with inhibition of unwanted thoughts and affect (Mitchel et al., 2007), and the

activation of areas of the brain associated with experiential consciousness (Braun, et al., 1997; Nofzinger et al. 1997; Marquet et al., 2000). The neurobiological evidence supports Freud's basic hypothesis that dream content is comprised of unconsciousness and inhibited material. While we are experiencing dreams, we are uncharacteristically accepting of outrageously irrational situations that defy our reason-based narratives for the external environment. Dinosaurs, flying cars, celebrity encounters, reanimated loved ones, superpowers, indignant cats, and the incredulous plots that contain them – are but a few of the countless examples of experiences that would shatter our reality if they were to be experienced in waking life. (As an aside, in the TV show, "The Carbonara Effect," an illusionist places unsuspecting participants in unbelievable situations and demonstrates that waking individuals do indeed exhibit "mind blowing" responses when confronted with dream-like events). Perhaps this is why the meta-critic within us is deactivated during REM sleep, so that it cannot interrupt the agenda of operant-experiential processing? For when we wake up we, are either left wondering what all those bizarre experiences *meant*, or we dismiss them as frivolities of a disorganized resting brain.

This relates to the last point we will make now about dreams, the JH, and the Tri-partite Model of Human Consciousness, which is that our private narrator is perpetually seeking to craft justifiable stories about our experiences, and this includes our experience of dreaming. Those of us with thin-boundaries who frequently and vividly remember our dreams may feel especially compelled to find reasons for *why* we are dreaming what we are dreaming, whereas those with thick boundaries may more easily dismiss dream content or simply be less aware of it in the first place (Hartmann, 2010). Either way, while dreaming we are less compelled to justify what is happening in the dream to the

outside waking world, and are instead totally immersed in the inner reality of the dream world. However, once we awaken, the justification system begins to work immediately to inhibit or assimilate the fragments of dream content that penetrate awareness from the night before.

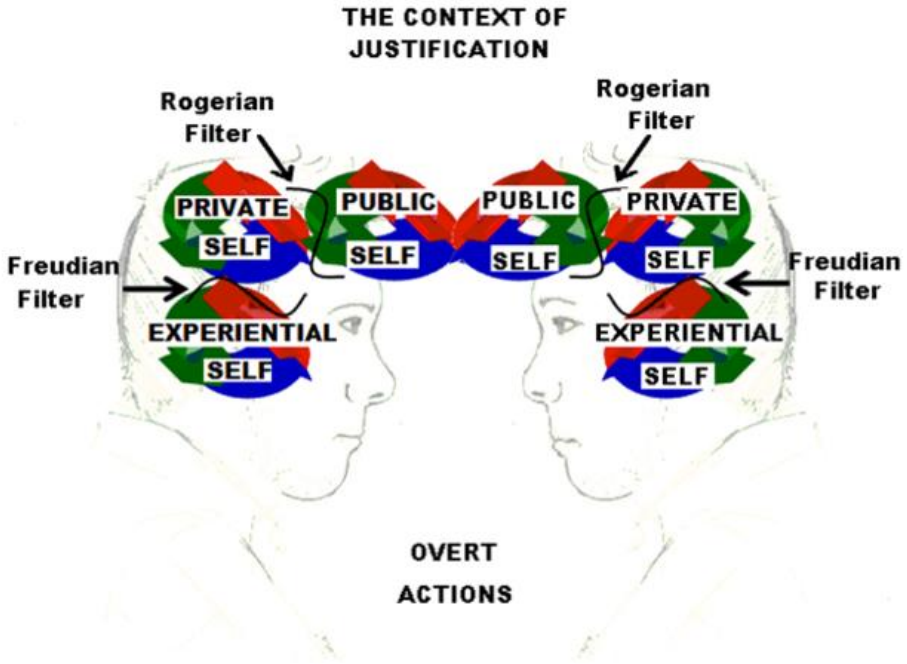

Figure 4. The Tripartite Model of Human Consciousness

Chapter 3: Integrative Perspective

We have reviewed the fragmented state of dreaming research and have offered a brief summary of the key elements that make up the UT. Hopefully, by obtaining a sense of the ways in which the Behavioral Investment Theory conceptualizes emotions, the Matrix conceptualizes human social motivation, and the way the Justification Hypothesis frames the domains of human consciousness it is beginning to become apparent that the UT provides away to organize, assimilate and integrate many of the fragmented threads in the dream literature.

In this chapter, we will use our developing Unified Theory of dreaming to explore ancient dreaming, find common ground between Freud and Hobson, and explore dreams through the lens of BIT and the Somatic Marker Hypothesis. Our goal in this chapter is to 1) gain exposure to the breadth of dreaming's influence on humans across cultures and time, 2) show that Sigmund Freud and Alan Hobson ultimately have similar views regarding energy regulation and its relation to dreaming, and 3) focus upon mechanistic action of emotional processing within dreams. We will then conclude the chapter with a dream interpretation.

The Epic of Gilgamesh

The human fascinating with dreaming dates back deep into history and goes back at least as far as 2,000 B.C., and is documented in the Mesopotamian poem, The Epic of Gilgamesh (George, 1999). The Epic of Gilgamesh is considered the earliest surviving piece of Western literature, and in it are recounted the adventures of the warrior king Gilgamesh and his best friend Enkidu, a wildman and seer. Within the eleven Tablets that depict this epic, five feature dreams as key narrative elements. The study of dreams

in antiquity is a rich field unto itself, and a broader consideration of this domain is beyond the scope of this manuscript. Here we limit ourselves to highlighting the significance of the featured role of dreaming and dream interpretation in this most ancient text, and also to analyze a few excerpts from the vantage point of the Unified Theory in order to identify key dream features consistent with the modern theories discussed in later sections. We will show that, at level of human Culture on the ToK, dream incubation and interpretation are featured in the first surviving piece of Western literature, which gives us insight into the importance of dreams to human beings 4,000 years ago. We will be able to glean that the authors and audience were aware of dreaming and were trying to assimilate remembered dream content into justifiable narratives. We will also see that dreams represented in Gilgamesh are consistent with Hartmann's concept of the metaphorical Central Image (Hartmann, 2010), and also with theories that suggest dreams simulate current concerns anticipate future threats (Revonsuo, 2000). Finally, from a meta-perspective, it is worthwhile to note that the dream interpreters in the story are characterized as wise and valued, and therefore a case can be made that psychologists continue to fulfill this role in through our modern justification systems that likewise attempt to explain the phenomena of dreaming.

The story begins in Tablet I with the citizens of Uruk pleading to the gods for help with their oppressive king, Gilgamesh. Gilgamesh is part god and part human, and the gods respond to the pleas of the townspeople by creating Enkidu, a wildman who would be able to face Gilgamesh as an equal. As Enkidu journeys to Uruk, he is told that Gilgamesh has anticipated his arrival, "*Before you even came from the uplands,*

Gilgamesh in Uruk was seeing you in dreams (George, 1999, p. 10)." The beginning of the dream is as follows:

Gilgamesh rose to relate a dream, saying to his mother: "O mother, this is the dream I had in the night- , 'The stars of the heavens appeared above me, like a rock from the sky one fell down before me. I lifted it up, but it weighed too much for me, I tried to roll it, but I could not dislodge it.'" (George, 1999, p. 10)

There are several key features to note in this passage. The first is the *anticipatory function* of the dream. Enkidu is in route to Uruk with the intent to defeat Gilgamesh, but is told that Gilgamesh has already "seen" him in dreams. Gilgamesh, through the experience of his dream, anticipates the threat ahead of time. The second feature to note is the use of a symbolic Central Image (Hartmann, 2010) to depict the socio-affective experiential reality of Gilgamesh's future encounter and relationship with Enkidu, *rather than a literal representation*. Enkidu is not presented in the physical form of himself, but as a meteorite that Gilgamesh, accustomed to total supremacy in strength, cannot dominate physically. Gilgamesh tries several strategies to move the meteorite to his satisfaction, but cannot. He is thus stumped in the first portion of the dream. Gilgamesh continues to recount the dream to his mother:

"The land of Uruk was standing around it, [the land was gathered] about it. A crowd [was milling about] before it, [the menfolk were] thronging around it. [Like a babe-in]-arms they were kissing its feet, like a wife [I loved it,] caressed and embraced it. [I lifted it up,] set it down at your feet, [and you, O mother, you] made it my equal." (George, p. 10).

Recall that the townspeople have summoned Enkidu to overthrow Gilgamesh, and so Gilgamesh dreams of the people kissing the meteorite's feet. From a Unified Theory perspective, we would interpret this via the lens of the Influence Matrix that Gilgamesh would experience this as a challenge to his status, social influence and relational value (the Black Line). Then, having already failed to move the meteorite through his traditional self-oriented strategy comprised of hostility, dominance, and autonomy (see Figure 2), the dream depicts Gilgamesh shifting to an other-oriented love strategy in which he embraces the meteorite and then offers it to his mother so that she can transform it into his equal. Next in the story, the mother is depicted as "clever and wise," and "well versed in everything (George, p.10)." She then interprets the dream for Gilgamesh by telling him that gods sent the meteorite to him as a companion. She concludes her interpretation by speaking for goddess Ninsun:

"You lifted it up, set it down at my feet, and I, Ninsun, I made it your equal. Like a wife you loved it, caressed and embraced it: a mighty comrade will come to you, and be his friend's saviour. Mightiest in the land, strength he possesses, his strength is as mighty as a rock from the sky. Like a wife you'll love him, caress and embrace him, he will be mighty, and often will save you." (George, p. 10).

We can now note the *function* and *role* of the dream interpreter. Gilgamesh turns to his wise and clever mother for an interpretation of what he has dreamt, and her role as interpreter is depicted as integral to Gilgamesh's eventual constructive choice to cooperate with Enkidu after he meets and fights with him waking life. She is able to analyze the symbols, metaphors, and socio-emotional themes of the dream and translate them into a literal form that is pragmatically useful. For example, it is not a meteorite

Gilgamesh will encounter, but a future friend and companion. The role of the dream interpreter can be considered within the context of the neurobiological research on patients with damage to the corpus callosum, the area of the brain responsible for communication and coordination between the left and right hemispheres of the brain. Studies conducted by Michael Gazzaniga showed that, even when the left hemisphere is blind from information given to right hemisphere, the left hemisphere will nonetheless create verbal justifications for the actions that the right hemisphere was responsible for performing (Gazzaniga, 1997). This led Gazzaniga to conclude that there exists a "left-brain interpreter" system within the brain that is responsible for generating justifications and narratives for our actions and experiences. That Gilgamesh would wish to make sense of his dreams and relied upon wiser others help him to do so is congruent with the claims of the Justification Hypothesis (Henriques, 2011) and the neurobiological research conducted by Gazzaniga (1997).

In Tablet IV, Gilgamesh and Enkidu, now close friends, have embarked on a quest to slay a fearsome forest ogre named Humbaba (George, 1999, p. 30). In earlier tablets, Humbaba is depicted as deadly and powerful, and that merely being in his forest causes one to experience terror. Five times during their travels to the forest, Gilgamesh and Enkidu pitch camp and perform a ritual designed to incubate a dream for Gilgamesh. Before falling asleep in the House of the Dream God that Enkidu has crafted for him, Gilgamesh asks the mountain to bring him a dream so that he can "see a [a good sign!] (George. P. 33)." In each of the five dreams, Gilgamesh experiences nightmares, and he wakes up anxious and confused:

"My friend, I had a dream: how ominous it was, how desolate, how unclear! I had taken me hold of a bull from the wild: as it clove the ground with its bellows, the clouds of dust it raised thrust deep in the sky, and I, in front of it, leaned myself forward. 'Taking hold of ..... enclosed my arms . . . . he extricated [me] ... by force . .. My cheek ... , my ... , [he gave] me water [to drink] from his waterskin.'" (George, p. 37)

Despite this, Enkidu, always interprets the dream imagery positively and assures Gilgamesh that the dreams are, in fact, good omens:

"The [god,] my friend, we are going against, he's not the wild bull, he's different altogether. The wild bull you saw was shining Shamash, he will grasp our hands in time of peril. The one who gave you water to drink from his skin was your god who respects you, divine Lugalbanda. We shall join forces and do something unique, a feat that never has been in the land!" (George, p. 37).

We note that Gilgamesh and Enkidu are both anxious about their upcoming battle with the ogre, and *the primary preparation* for the anticipated confrontation is the repeat performance of elaborate dream rituals designed to manifest empowering dreams. Despite his desire to receive a good omen, Gilgamesh is shown to experience these dreams as confusing and anxiety provoking. A demigod warrior of unmatched strength is depicted as relying repeatedly upon the dream interpretations of his seer-friend Enkidu, who assures him that the dream imagery represents helpful visitations by divine beings. Indeed, as shown in the meteorite dream in Tablet I (George, 1999, p. 10), the role of dream interpretation is presented as so integral that Gilgamesh dreams about his dream itself being interpreted.

The Epic of Gilgamesh shows us that our ancestors as early as 2,000 B.C. were not only well aware of dreaming, but had explored the phenomena of dreaming to the point that dream interpretation was a key part of their literary culture. How this manifested in actual ancient Mesopotamian society is beyond our psychological domain of expertise. Indeed, our analysis of dreams is largely limited to the scope of tracking general dream process, affect, and the socio-relational dynamics as outlined by the Influence Matrix. This is because dream process and the organismic dynamics that the Influence Matrix represents are theorized to be universal across cultures, and thus exist at a level of evolutionary complexity that is likely in many ways proto-human (de Waal, 2006). Interpretation of the specific content of the dream is also limited to the interpretations offered by the text itself. For example, we have not indulged in an archetypal exploration of what a bull symbolically represents to the character of Gilgamesh, though a trained Jungian might be able to attempt this successfully (Jung, 1945). The first and most obvious reason for our restraint is that The Epic of Gilgamesh is an ancient poem, and we cannot verify that this dream is an accurate representation of stimuli manifest from experiential consciousness. Even if we are to suspend our disbelief and treat Gilgamesh's dreams as accurate and authentic, we would be unaware of his unique ontogenetic accrual of associations related to bulls. At the cultural level of analysis we could look to scholars of antiquity for clues about the valence of bull-related idolatry in the time period Gilgamesh would have lived, but at a clinical depth level of analysis this would not give us insight into Gilgamesh's private and experiential reality.

Instead, then, we track Gilgamesh's own stated and implied experience of his dreams in relation to his environmental stressors. Though the full contents of the dream

are lost, we can make out from the imagery and language used that he has dreamt of wrestling intensely with a powerful and intimidating bull. He wakes up and exclaims that the dream was "ominous, desolate, and unclear! (George, 1999, p. 37)." In modern clinical language, we could label his dread and uncertainty as the experience of fear and anxiety. We then remind ourselves that Gilgamesh is anxious in his waking life about an upcoming battle with an ogre, and when he awakens from a dream in which he fights with a bull, he is fearful that this is a literal omen portending his ill fate. From a UT perspective, Gilgamesh's self-consciousness system is attempting to craft both his experiential anxiety and the unusual contents of his dream into an adaptive narrative. The depictions of Gilgamesh's anxiety dreams also appropriately mirror the affective reality of his stressful waking life situation.

UT analysis of the text itself shows that there was, in fiction or reality, the creation of a prestigious role of dream interpreter that could facilitate alleged predictive and empowering functions of dreaming. Why might this be? A central tenet of the Justification Hypothesis (Henriques, 2011) is that human beings are compelled to organize their experiences into consistent narratives that can be tailored to justify one's experience and behavior to others. This is the foundational development that forms the Rogerian filter between public and private self-consciousness, and, in some individuals with greater awareness of their experiential self, places pressure on them to create narratives of their experiential reality. For those who remember their dreams, creating a satisfying narrative about the bizarre and compelling dream content is an appreciable cognitive challenge. Perhaps similar to the role of a modern therapist, Gilgamesh's wise mother and trusted friend Enkidu are utilized for their ability to craft the contents of his

experiential confusion into an adaptive narrative that aligns this experiential, private, and public selves. As we continue now to modern dream research and theory, it is worthwhile to wonder just how foundational a conscious relationship with dreaming is to the human experience, given that the first surviving story ever written is also the first documented interpretation of dreams (George, 1999).

Freud and Hobson

Beyond the Pleasure Principle (1920) is regarded by many as Freud's most controversial and confusing publication (Gay, 2006). In this text, he speculates on the mechanisms and strategies of human ontogenetic development, discusses the recurring dreams of individuals experiencing war neurosis (what we would now call Post-Traumatic Stress Disorder), and conceptualizes the psyche as primarily an energy management system. Freud's tone is tentative, and he repeatedly reminds the reader that he is delving into territory that could be later embarrassing for him. Indeed, his concept of a death drive is experienced by many, including his followers, as misguided and inaccessible. However, analysis of the text from a UT perspective allows us to see similarities between Freud's conceptualization of the development and function of the ego and the modern conceptualizations of a "Bayesian brain" offered by the most outspoken critic of Freudian dream theory, Alan Hobson (Rock, 2004). Using Henriques' (2003) review and integration of Freud's major insights as a guide, we will show that a UT lens can operate as an assimilative bridge between two traditionally disparate views on the function of dreams. Freud and Hobson both ground their theories of dreaming in language that can be organized by BIT, with particular focus on the principles of *energy economics* and *computational control.*

Freud begins his essay by referencing the work of 19th century German psychologist and philosopher Gustav Fechner, who offered a prescient definition of pleasure and pain. Fechner described the experience of pleasure and pain as originating from movement that penetrated beyond a threshold and into the realm consciousness. He suggested that there is an organismic tendency towards equilibrium, and that pleasurable sensations were movements towards approximated equilibrium, whereas painful sensations were movements towards chaos and instability. The area of activity between the subjective experience of pleasure and pain he considered to be a range of aesthetic indifference. Thus pain and pleasure are what enters our consciousness when there is exceptional implicit movement toward or away from stability.

Freud then pairs Fechner's observations with his belief that there is an "economic" tendency within the psychic apparatus to keep the quantity of its excitation low or stable. Freud observes that if human beings were governed only through the attraction to pleasure, then more of our experience of life should be characterized by the experience of a pleasurable state. Other forces, he writes, must be at play. He then offers a second quote from Fechner's 1873 essay: "Therewithal it is to be noted that the tendency towards the goal does not imply the attainment of it, and in general the goal is only approximately attainable. . ."

We can recognize Freud's alignment Behavioral Investment Theory's principle of *energy economics* when he claims that the psychic apparatus tends to utilize the least energy possible in the general pursuit of a pleasurable state (Henriques, 2003). But what is a pleasurable state? He looks to Fechner for support in suggesting that pleasure itself is

the approach towards the *approximated desired goal state* of organismic stability, whereas pain is the movement in the direction of instability.

After noting that pain is a subjective and *perceptual* experience of danger that then activates a real response from the psychic apparatus, Freud discusses the phenomena of war/traumatic neurosis, or what we would now call post-traumatic stress. After briefly listing the familiar clinical symptoms of what we would term intense depression and anxiety, he observes that a significant factor in the development of the post-traumatic state is that the individual was *surprised* during the traumatizing event. He then makes a distinction between apprehension and fright. Apprehension is expecting a particular danger and preparing for it, and fright is experienced when one "encounters a danger without being prepared for it (p. 5)." In his view, trauma was caused by the unexpected.

Freud observes that trauma dreams differ from common anxiety dreams in that the trauma dream "continually takes the patient back to the situation of his disaster, from which he awakens in renewed terror (p. 5)." Freud notes that, in contrast to hysterical patients who are fixated on negativity in conscious waking life, the patients with war neuroses actively tried *not* to think about their painful past. If we are to accept the claims of Freud and BIT that organisms gravitate towards adaptive states of subjective pleasure and stability, then what is the adaptive function of the system re-traumatizing itself with recurrent recreations of a most horrible event?

Freud makes a sudden transition into an analysis of repetition compulsion in the context of the play behaviors of young children. He presents his observation that children who have experienced a painful situation or dynamic create games that replicate the emotional drama. For example, a young child who misses his mother may push his

toys away angrily and then bring them back joyfully. The child is then able to release the strength of the emotional pain related to abandonment whilst making themselves "masters of the situation (p. 9)." Freud explores this idea further by pointing out that children also enact their painful dramas upon other children, and that the adult artist inflicts, through successful sublimation, his childhood wounds and subsequent worldview upon his audience. He then laments on the difficulty in helping patients to both remember their early formative events and to recognize the repetition compulsions that continue to develop from them, and describes transference and countertransference as follows: "[the patients] know how to recreate the feeling of being disdained, how to force the physician to adopt brusque speech and a chilling manner towards them . . .they substitute for the ardently desired child of early days the promise of some great gift which becomes as little real as that was (p. 12)."

After sketching observations and arguments for primary versus secondary consciousness (and what would later become his tripartite Id, Ego, and Superego model of mind), Freud offers a vivid description regarding the development of organic form. He describes an organism as having an outer membrane that protects the inner, more sensitive matter from the destructive energies of the external environment. Over time, the bombardment of energy burns away and hardens the organism into a shape that makes it "impossible for the energies of the outer world to act with more than a fragment of their intensity on the layers immediately below which have preserved their vitality (p. 17)." The protected vital levels receive the tolerable and useful levels of stimuli that are allowed to pass through by way of the hardened systems. These data samples of the

external environment are analyzed by the intelligence of the organism and then converted into an adaptive response.

But what happens when the flow of external energy exceeds the capacity of the organism to regulate and control that energy? Freud suggests that an overwhelming *surprise* eruption of energy in the nervous system causes disruption in the inner workings of psychic systems. "The outer layer has, by its own death, secured all the deeper layers from a like fate—*at least so long as no stimuli present themselves of such a strength as to break through the protective layer* [emphasis added] (p. 17)." Therefore "counter-charges" are summoned by the psychic apparatus to bring the over-excited system under control. These "overcharged" systems that surround the penetrated systems signal pain "more proportionate to the mode of operation of the system than the stimuli streaming in from the outer world (p. 19)." The purpose of these protective overcharges is to compensate for the failure of the physical membrane to regulate the flow of stimuli into the unprotected areas of the organism. The pain response to the stimuli associated with the traumatic penetration is perceived by the self as "acting not from within, but from without, in order to for it to be possible to apply against them the defensive measures of the barrier against the stimuli (p. 19)." The apprehension/preparation mechanism in combination with the overcharging of the receptive systems is the bolstered inner defense against a future surprise or trauma of a similar kind.

Freud writes that recurring trauma nightmares are thus an extension of the apprehension mechanism, and force an individual into a state of preparedness by rehearsing the traumatic event in a repetition compulsion. He writes that, the same way a joke heard a second time fails to produce the same effect, and theatrical performances are

less impressionable upon repeat viewings, the traumatized individuals rehearse their trauma to diminish the potential for a similar event to cause surprise and damage.

In Beyond the Pleasure Principle Freud lays out several themes and observations that he could not synthesize clearly into a compelling narrative. However, from our UT vantage point we can observe that Freud has laid out key principles of psychological theory that are consistent with the meta-theoretical insights of BIT. Citing Greenspan (1989), Henriques in 2003 summarized Freud's general developmental perspective as follows: "The ego is initially part of the id. However, as experience impinges upon it, it evolves into an increasingly sophisticated problem-solving device that, in proper development, manages a more and more sophisticated relationship between the demands of the internal and external world."

The ultimate goal of the ego, then is to maintain autonomy as a closed-loop energy system by maintaining a low excitatory (low anxiety) state by reducing free energy within the system. The ego, which can be considered an amalgam of phylogenetic memory and ontogenetically acquired conditioned and learned responses, is shaped by its encounters with the environment in such a way as to regulate the energy flow between environment and self. Trauma is the result of a damaging penetration of energy into an unprepared system, and this results in a defensive shaping of the neurology such that the individual becomes postured perceptually and behaviorally to prevent being traumatically surprised again. This manifests in repetition compulsion, both in waking life and in dreaming, in order to repair the damaging impact of the initial trauma and also to hone the self in preparation against a surprise of a similar nature in the future.

"We have recognised that one of the earliest and most important functions of the psychic apparatus is to bind the instreaming instinctive excitations, to substitute the secondary process for the primary process dominating them, and to transform their freely mobile energy charge into a predominantly quiescent (tonic) charge. During this transformation no attention can be paid to the development of pain, but the pleasure-principle is not thereby annulled. On the contrary, the transformation takes place in the service of the pleasure-principle; the binding is an act of preparation, which introduces and secures its sovereignty (p. 50)."

From the opposite spectrum within the political realm of psychology, Alan Hobson is known in the dream research community not only for his pioneering contributions to our understanding of the neurophysiological mechanisms of dreaming, but also for his outspoken condemnations of Freudian theory (Rock, 2004). In 1977, Hobson showed that, neurologically, the brain signals responsible for REM sleep dreaming originate in the brain stem. From there, he assumed that dream content itself was merely the byproduct of the electrical activity of the pons spilling over into the visual areas of the brain. He concluded that dreams are the mind's best effort to make sense of its own confused reality by weaving the randomly generated visual images into a story. Hobson then popularized this view, not only because he believed it was the correct way to conceptualize dreaming, but also because he thought this was an effective strategy to undermine the influence and credibility of Freudian theory (Rock, 2004).

However, Hobson's current beliefs about dreaming have many surprising similarities to the speculations offered by Freud in Beyond the Pleasure Principle. Hobson now advocates for a Bayesian model of dreaming (Hobson and Friston, 2012),

which asserts that the purpose of the brain is to minimize free energy within the organismic system through accurate perception of the external environment. Free energy itself is defined as the calculable discrepancy between the real features of the external environment versus the organism's perception of those features. Friston in 2008 wrote:

"The free-energy considered here represents a bound on the surprise inherent in any exchange with the environment, under expectations encoded by its state or configuration. A system can minimise free energy by changing its configuration to change the way it samples the environment, or to change its expectations. These changes correspond to action and perception, respectively, and lead to an adaptive exchange with the environment that is characteristic of biological systems." Here we see language and theory compatible with the computational control and energy economics of BIT. We also see the construct of "surprise" noted as key in this relationship between organism, environment, and energy regulation.

Hobson has adopted the popular technological metaphor of the day, and explains the brain as a virtual reality simulator (Hobson, 2014). Hobson combines this perspective with Friston's interpretation of the principle of free energy minimization to theorize that dreams are a form of simulation used to enhance the adaptive perceptual capacities of an earlier evolved layer of consciousness. The similarities to the Freud's 1920 description of ego function should be increasingly salient. Hobson also delineates two broad forms of consciousness based on the work of American biologist, Gerald Edelman: primary and secondary. Primary consciousness is the schema and sensory based construction of our subjective virtual reality that we then make rational decisions about using our more recently evolved secondary consciousness (Hobson, 2009). Hobson and Friston (2012)

suggest that primary and secondary consciousness work together to as a predictive mechanism designed to *reduce the amount of surprise* one may experience through engagement with the external environment. From a UT perspective (Henriques, 2011), primary and secondary consciousness can be viewed as experiential versus private self-consciousness respectively.

Hobson and Friston (2012) argue that the brain minimizes prediction errors through feedback loops between behavior and environment. This reduces the energy difference between bottom-up sensory inputs and top-down prediction, and results in parsimonious explanations for the complexity the organism encounters in the environment. Dreaming is a state in which reception to external stimuli are drastically minimized, and so it is a perfect time to integrate accumulated experiences through an internal calculating process. Hobson argues that the purpose of dreaming, and REM dreaming in particular, is to reduce perceived complexity. Reducing complexity reduces mental calculating costs, while at the same time reducing the odds of encountering surprise. The energy quiescence from this integrative process lends itself to better energy regulation in the brain, and also increases the capacity for the organism to engage in behaviors that enhance fitness.

In UT language, the organism is seeking more energy efficient ways to remain in alignment with goal states subjectively experienced by the organism as pleasurable and adaptive (Henriques, 2011). Indeed, this model of dreaming is founded upon the principle of *energy economics*. That Hobson and Friston did not cite Freud's proposals in Beyond the Pleasure Principle is an example of the fragmentation of our knowledge, for

both camps are using identical language and theory to describe the basic mechanisms of the psyche and dreaming nearly a century apart.

The Unified Theory allows us to find the common ground between two disparate and influential figures in dream theory, and gives us solid ground from which to proceed to more complex territory. For while a rough sketch of a perception, motivation, and emotion (P - M => E) is hinted at by both Freud and Hobson, the missing components for a fuller understanding of dreams is a more detailed look at the emotional systems existing at a level of analysis between energy economics and subjective cultural values. In other words, knowing that dreams help reduce energy costs whilst increasing our ability to reduce surprise is, by itself, reductionist at the clinical assessment level. As clinicians we would not assess the needs of a client and then offer back to them simply, "It looks like you are struggling to regulate complexity and energy." While a reductionist assessment is accurate, we can venture forward with greater sophistication in our discernments in order to align with the richer reality of human experience and expression.

In summary, Freud and Hobson, in their own languages, assert that organisms seek to reduce uncertainty and surprise through the development of better predictive models of their environment (Freud, 1920; Hobson and Friston, 2012). They agree that this predictive refinement occurs through the accumulation of context-based experiences that are then used to consider the present and anticipate the future. Freud developed his model of neurosis based upon the organic consequences of convoluted and circuitous pathways that energy needed to navigate in order to express or discharge, and Hobson similarly reports that the brain risks becomes strained due to the increased calculating costs of factoring too many experiences and conditions into the predictive model. What

is missing from both perspectives is a clearer understanding and integration of the operant/experiential level of processing that includes the relationship between perception, motivated goal states, and emotion.

Somatic Marker Hypothesis

One model for how emotional systems work at the process level is the Somatic Marker Hypothesis, which states that our brains keep careful record of our emotional experiences throughout our lives. These emotional reactions to events, situations, and stimuli become remembered experientially as somatic markers (Damasio, 1994). Once imprinted by experience, somatic markers are then activated when we encounter similar events, situations, and stimuli. They then help us make efficient, cost-beneficial decisions that move us closer to our desired goal states.

Damasio and his colleagues view emotions as having more direct influence over our decisions than the executive functions of the rational cognitive mind. In his formulation, the rational mind serves to work out the details of decisions that have already been decided through experiential consciousness. How we feel about something is more causal to our behavior than how we rationally justify it. Here again we sense the hierarchical structure of the mind and its gradations of plasticity and influence.

Damasio concretized his insights by focusing his research on an area of the brain known as the ventromedial prefrontal cortex (vmPFC). Subjects with lesions in the vmPFC showed impaired decision making in real-life settings, but maintained normal intellectual functioning otherwise (Bechara & Damasio, 2004). These patients had difficulty planning their days, relationships, and finances, and suffered significant losses in these critical domains. Damasio has personally observed, for example, that his

subjects could ruminate at great length about what restaurant to go to, as they could go on and on weighing the pros and cons. This pattern of poor decision making was absent in the patients prior to the condition that led to vmPFC damage. However, scores on cognitive tests and problem-solving tasks conducted in the laboratory setting remained normal. The discrepancy between the cognitive ability versus appropriate emotional reactions and decision making is the basis of somatic marker theory. Without the proper input from emotions, these patients would remain uncertain about how they felt when faced with decisions. With two roads diverging in a snowy wood, long would these patients deliberate on the best way to proceed. Somatic states, then, are a vital and vibrant component in our complete animal-human experience, and without them we are ill-equipped to make adaptive choices in our self-stories.

Damasio and Bechara (2004) explain that these critical somatic states are elicited through *primary inducers* and *secondary inducers*. Primary inducers are innate or learned stimuli that, when encountered in the external environment, trigger an immediate emotional response. Primary inducers include the encounter of a fear object (e.g., a snake), or a stimulus predictive of a fear object. "Primary inducers are also concepts or knowledge that through learning can automatically and obligatorily elicit emotional responses, such as hearing that you have won a prize or lottery ticket…(Demasio and Bechara, 2004, p. 340)." Additionally, discovering the solution to a puzzle or problem results in an "aha" experience that is considered to be a primary inducer of a pleasurable state.

Secondary inducers, on the other hand, are the images and entities conjured by imaginative thought when simulating a hypothetical event. These are the recollections of

past experiences that, when combined with present stimuli, create an experience in working memory that elicits an emotional/somatic state. When our thirsty cat imagines the dog from the birdbath, those *images* of the dog secondarily induce the emotion of fear. A gambler may imagine winning a large sum of money and experience an emotion of pleasurable seeking and anticipation.

In neurologically normal individuals, development of primary inducers leads to the ability of secondary inducers to generalize across associated schematic categories (Damasio and Bechara, 2004). If we burn our hand on a stove and feel pain, when we see boiling water we will exercise similar caution as we would toward a stove, even though we have not yet burned our hand in water.

A personal example may clarify. Recently I was at lunch with colleagues and eating a salad. I had mistakenly swallowed a whole leaf of lettuce and experienced excruciating pain as I left the table searching for a source of water to wash it down. A few days later I sat down to another salad and, upon looking down at my meal, noticed a surge of anxiety and a sharp feeling in my throat. Recognizing a disproportionate reaction to a benign stimulus, I reflexively engaged in a moment of free associative introspection. Suddenly my mind flashed to the memory of earlier choking on the single lettuce leaf. In that instance, I was able to catch a secondary inducer in the moment and bring it into my private self-consciousness. I could not help but to eat this salad more carefully than the last, and I assure you that my attention was not focused on the specifics of mastication through a personal interest or fascination with the process; my somatic markers focused my attention in such a way as to minimize the risk of choking a second time.

In my instance, I did experience flashes of lettuce leaves and choking in my working memory (Demasio, 1994), and my private self-conscious awareness of those images served as a deepened layer in the back-and-forth pinging between primary and secondary inducers. Though imagining stimuli in working memory is often neurologically less intense than experiencing similar stimuli in the physical world, this imaginative activity is still experience that shapes and changes our behaviors and decisions. Primary and secondary inducers should not be thought of only in linear terms of A to B and cause and effect, as their relationship is instead bidirectional and reciprocal.

To summarize, stimuli are recognized by the senses, evaluated by the perceptual system that transforms the neurochemical sense information into self-relevant representations, those representations referenced against motivational goal states, emotional energy waves are generated that encourage a behavioral response, the imaginative thought structures simulate a plan of action, and a behavior is engaged based upon the totality of this process.

To test decision making, Damasio and Bechara (2004) utilized The Iowa Gambling Task paradigm. Participants in the gambling task are asked to choose between four decks of cards 100 times. Each deck represents temporally dependent reward and loss ratios. Participates are not told how many card selections they are allowed to make, must choose one card at a time, and can freely move between decks each round. The participant is unaware of the reward schedules contained in each deck, but the experimenter is aware. Decks *A* and *B* are set up to yield high immediate gains and large future losses, whereas decks *B* and *C* have lower immediate gains but longer-term pay-

off. In summary, the gambling task tests the ability of experiential consciousness to adaptively create a good behavioral investment strategy.

Normal control participants gravitated away from the disadvantageous decks and more often selected the advantageous decks. Participants with damage to either the amygdala (important in processing anxiety and fear) or the ventromedial cortex did not avoid the bad decks that caused long term losses. Moreover, there were also differences in skin conductance responses (SCR) between control and experimental groups. Normal participants showed increased emotional activity when they received a reward or a loss through card selection, and they also showed increased emotional activity before they selected any cards. The increased SCR activity was most pronounced in the decision period before selecting a card from one of the bad decks that had high reward and loss ratios that ultimately led to long-term losses. The subjects with damage to their ventromedial cortex did show SCR activity when experiencing reward and loss, *but did not show any activity before picking a card* (Bechara et al., 1999). In summary, Damasio and Bechara found the vmPFC to be key in weighing the somatic signals emanating from experiential consciousness. Those somatic signals are then relayed to executive functions and private self-consciousness.

A study conducted in 2016 (Seeley, et al.) showed that vmPFC activity during REM sleep is correlated with improved performance on the Iowa Gambling Task (IGT). The researchers first took two nights sleep of participant's baseline EEG recordings. On the third night, participants were either assigned to the IGT or IGT-control group. In the control group, the card task simulates the same timing, number of deck choices, and visual outputs as the regular IGT task, but without the simulated

monetary rewards and punishments that elicit emotional learning. Skin conductance response (SCR) was also measured during the IGT task session 1. After the card tasks, each participant's sleep was measured using the polysomnography to approximate the location of the vmPFC. The next day, participants showered, ate a light breakfast, and were administered the IGT in a second session. The results showed that, in the IGT group, theta activity (a wave frequency associated with higher activity brain regions associated with memory and survival behaviors) appeared to increase during REM sleep in the left and right medial prefrontal cortex. Within the IGT group, *increased theta activity in the vmPFC associated regions was correlated with improvements in deck choice*. Lastly, higher anticipatory SCR's prior to choosing a bad deck were correlated with increased theta activity in REM sleep following the task.

These studies together suggest that the more emotionally excited participants became when choosing card decks, the more that somatic markers were formed at the operant level of experiential consciousness. Though the participants may not have known in private self-consciousness which decks to choose, at the experiential consciousness level they were being guided by previous experiences that were stored in somatic memory. In the REM sleep study by Seeley et al. (2016), it was shown that activity in the vmPFC during REM sleep was correlated with improvements in deck selection the following day. While speculative, this data supports theories that emotional experiences are processed at the experiential level during REM sleep, and because the Iowa Gambling Task elicits anxiety through loss aversion, this study also supports the evolutionary perspective of threat simulation theory.

P - M => E and Somatic Markers

We thus put forward that somatic markers function at the operant experiential level of human architecture, and are integral in the perception - motivation => emotion equation of behavior. When somatic markers release emotions that penetrate into the imaginative thought (level), they function as secondary inducers. The emotional memory of the imprinting event is produced as image, which then the emotional centers of the brain can react to again. It is almost as though the somatic marker is casting its own shadow to be observed by the conscious self. This imaginative process is theorized to aid in the planning of an action (Damasio and Bechara, 2004).

To complicate matters further, what penetrates into experiential consciousness is then subject to scrutiny by the linguistic justification system of private self-consciousness (Henriques, 2008). In the world of persons, any pending behavioral action must be considered in light of justifiable social action. As I was choking on my lettuce leaf in front of colleagues, I remained seated for moments as I imagined how I would explain my situation to others. I decided to get up and wave my hands downwardly to assure others I would be okay. My impulse to communicate my situation to others accurately and considerately can be attributed to the architecture of the human mind.

As we move through our waking life we first experience it at the most basic sensory information processing level (Henriques, 2011). However, for the information to pass through into the operant level of experiential consciousness, the information must be relevant to a motivated goal state of some kind. The motivated goal states themselves are modulated by the somatic marker systems, which are context-based emotional responses accumulated through learned experience. The somatic makers are modulations and

extensions of our hardwired fixed-action patterns (Geary, 2005), and these fixed-action patterns can be thought of as the innate or preprogram unconditioned reactions to the environment that then serve as starting point frames for building contexts for our emotions and justifications. For example, consider this in the context of our human relationship with food. We are born into this world hard-wired with a motivation to eat foods that contain nutrients vital to our survival. The fact that we are born with taste and flavor receptors that orient us towards salty, fatty, and sugary foods is evidence that our sense systems were shaped over a span of evolutionary time towards the obtainment of the most energy-dense options available in the hunter-gatherer environment. However, these just represent the hard-wired templates we are born with. Our emotional responses that orient us towards specific *kinds* of food and more creative and flexible strategies for obtaining that food are both examples of processing at a "softer" level of modularity. Then, how we think, feel, and talk about our preferences for certain foods and how to get them is the highest and most modular extension of the initial hard template that orients us towards pure energy consumption. In other words, we have come a long way from amoeba devouring microbes to arguing with our partners about what restaurant to go to, and the tiers of processing complexity along a continuum of hard to soft modularity helps us understand this.

Consider Freud's statement that neuroticism is the inability to experience pleasure as such (Freud, 1920). Through the operant conditioning process, if I experience pain within the context of what should be considered normally a benign or pleasurable stimuli, then I will have formed two categories of somatic markers within my experiential self. The first category of markers will signal me to avoid the stimuli, and the second

will signal me to approach. The more equal in power and influence the opposing somatic markers are, the greater will be my anxiety. Anxiety in this case is the disruption of behavioral certainty (Grupe and Nitschke, 2014). Because anxiety and uncertainty are aversive, the removal of the stimuli eliciting the approach/avoid dilemma would cause relief (and the responses that removed them would be negatively reinforced). However, in the event that context compels an approach or confrontation with vexing stimuli, imaginative thought at level 3 may be summoned to simulate outcomes. Whichever simulated outcome *feels* the best will be the action chosen, and then justified or rationalized through the private narrator and justification system. It is the very essence of the phrase "the lesser of two evils." If the dilemma includes a salient social consideration, then the imagination will not only factor in decisions that will be imagined to be acceptable by important others, but also how to justify the action to others.

This concept was demonstrated viscerally by Ivan Pavlov in his experiments on neurosis on dogs (Lidell, 1945). Pavlov was attempting to force a dog to discriminate between a circle and an oval to obtain food. However, the circle and the oval were too close in shape for the dog to be able to reliably determine the difference. After months of prolonged conditioning to these stimuli, the dog suddenly exploded with "extreme and enduring agitation (Lidell, 145, p. 1)," and squealed, writhed, and tore off the apparatuses attached to it. The dog, henceforth, would bark violently whenever taken to the experiment room. These results were replicated with other animals, such as sheep, goats, cats, pigs, and chimpanzees, and with other types of stimuli such as indiscernible differences in audial frequency. The manufactured neurosis was found often to be permanent, with animals affected for months and years after experimentation had ceased.

At the socio-emotional level of human processing, a similar issue can arise when child grows up with parents who provided inconsistent or impossible standards for receiving praise. The young child desperately yearns for the secure and reliable attachment with caregivers, and when the flow of relational value and emotional mirroring is compromised or chaotic for extended periods, the child develops neurotic behavioral patterns to defend against the felt torture of repeated false hope and rejection. Internally, the child will always feel the motivational need to be known and valued by important others, as this is a core need for the average human being. However, the pathway to trusting others becomes riddled with painful experiences that signal "AVOID." These patterns are considered neurotic because, as Freud discussed in our review of Beyond the Pleasure Principle, the idiosyncratic aversive responses that the child becomes imprinted with make it difficult for the child to view the intentions and motivations of others accurately. The child may develop an internal critic that interjects, "you are not good enough," when the child receives praise from other people. The anxiety response that results in the critical interject was originally designed to *defend* against yet another letdown. However, intimacy itself can become paired with aversive experiences and negatively reinforced avoidance patterns, and so the child may grow up in a state of uncertainty-anxiety because he or she experiences genuine validation from others, not as rewarding, but as punishing. Malan (1999) summarized the intrapsychic portion of this dynamic as a bi-directional and reciprocal triangle between an impulse, the signal anxiety, and the defense.

As this applies to dreaming, the primary function of REM sleep may be to organize and integrate discrepancies between somatic markers into an adaptive whole.

This occurs through the same operant feedback loop of simulated experience in waking described above, only it occurs during sleep when we are isolated experientially from the external environment. Fully immersed in the imaginative self, neural associations at the operant level of experience are free to cluster and interact without the restrictions of the environmental salient control variables. In other words, with external sensory input heavily gated (Hobson, Hong, and Friston, 2012), the experiential self is left with only its own fragmentation to encounter. This concept of self-fragmentation is based on the psychodynamic perspective that pleasure is integrative whereas pain is disintegrative (Symes, 2015). BIT summarizes the similarities between the behavioral and psychodynamic terminology by introducing the "pleasure—pain parallel fitness principle (Henriques, 2003)." Stimuli associated with pleasurable goal states are approached, whereas stimuli associated with the distancing from goal states are experienced as painful and are thus avoided. As painful experiences are internalized as somatic markers, they therefore exist internally as perpetrators of self-pain due to their secondary inductive function. The "pleasure—pain parallel fitness principle thus describes what is really as an interaction effect of phylogenetic by ontogenetic selection.

In a universe with clearly defined stimuli beneficial to the self, it would be easier for our somatic markers to organize in such a way that we consistently approached all that was good and avoided all was bad. Internal energy economics would be fairly straight forward, as we could be certain that what we were experiencing was in direct proportion to the reality of the external environment, and therefore always be justifiable at level 4 of human architecture. However, endurance of pain in the pursuit of an eventual reward is inevitable due to the complexity and ambiguity of our true

environment (Freud, 1920), and, as the experiential self operantly assigns both negative and positive valences to content and contexts, it seeks ways to organize that information into simpler heuristics for making decisions in waking life (Henriques, 2011; Hobson and Friston, 2012).

Dream composites are thus the visual representations of somatic markers clustered by their experiential similarity (Freud 1899). If my sports coach reminds me of my father in waking life, in the dream state I may encounter a composite of the two in which their features are chimeric, or their roles are interchangeable. This is also true of settings. I may dream of the current home I am living in that then transforms into a composite of the home I grew up in as a child. Through this lens, dreaming is the imaging of level 2 experiential consciousness resolving its confusion through simulated encounters between discrepant somatic markers of the same stimuli. From an energy economics perspective, there is a constant dialectical tension due to the organism's demand need to increase its awareness to better predict the environment, versus its need to consolidate those narratives into 1) simple experiential heuristics, and 2) justifiable narratives.

From a Unified Theory perspective, Jung's insights regarding compensation are congruent with threat simulation theory in relation to the P – M => E formulation we have integrated above. Recall that, according to Jung, compensation occurs when aspects of the experiential self are suppressed or repressed in order to project an inflated (or underinflated) self into the waking life environment. The experiential self tracks the behaviors in reference to the motivational goal states. If one's waking life behaviors have violated self-perception in reference to one's internally perceived appropriate

relational status in the environment, the real-time corrective emotions that were suppressed and repressed will manifest in a dream when private self-consciousness is deactivated (Voss, et al., 2015). To illustrate with an example, let use our Unified Theory approach to review my professor and cat dream outlined in Chapter 1.

Analysis of Fancy Feast Cat Dream

I am traveling in the back of a chauffeured luxury town car with my professor. She and I are having a discussion (I do not remember what about) when I notice her cat, which has suddenly appeared in the seat between us, successfully use a can-opener to open a can of cat food. I am impressed by the cat, and feel as though I must admit my error. I say with a differential enthusiasm: "Wow, your cat can feed itself out of a can!" My professor appears amused, and corrects me by saying, "No, my cat would <u>never</u> eat food out of a can." I am puzzled, and look at the cat to confirm what I had just seen. The cat turns and gives me a look of annoyance, and then lifts its paw out of the can, revealing a spoon that it then uses to scoop food out of the can and into an elegant crystal serving bowl. I feel embarrassed by my ignorance and lack of class.

Our UT approach to analyzing this dream is as follows:

"*I am traveling in the back of a chauffeured luxury town car with my professor*."

The car is reminiscent of an old Bentley or Rolls Royce. It is similar to a car in the famous commercial advertising "Grey Poupon" mustard as a distinguished product. The commercial itself depicts a wealthy man eating a meal with fine cutlery. The most treasured ingredient in the meal is the "Grey Poupon" mustard, which he then humorously denies another wealthy man who requests it. When I saw this commercial as

a child I was thoroughly impressed by the scene. I am thus primed in this dream to feel a humility that I somatically associate with a comical regality.

"*Her cat, which has suddenly appeared in the seat between us, successfully use a can-opener to open a can of cat food. I am impressed by the cat, and feel as though I must admit my error*."

In waking-life prior to the dream, I had argued with my professor that dogs were more intelligent than cats, and had done so with a jovial over-confidence in order to elicit levity and laughter in the classroom. Despite the informal and low-stakes nature of the exchange, I had indeed felt careful not to offend my professor, and at the end of the encounter I wondered if I had gone too far given that our relationship was newly forming. One of my nightly routines at that time was to feed three dogs with food out of a can using a spoon, and to see the cat open a can of food by itself felt like striking evidence of the superiority of cats. In the dream, I felt then, a relief to admit my error and ease any tension between myself and the professor.

"*My professor appears amused, and corrects me by saying, 'No, my cat would <u>never</u> eat food out of a can.*'"

I am taken aback by the failure of my deferential apology to have the desired reparative effect, and disappointed to be unable to share in the delight that occurs when one genuinely admits to another that, "you were right all along!"

"*The cat turns and gives me a look of annoyance, and then lifts its paw out of the can, revealing a spoon that it then uses to scoop food out of the can and into an elegant crystal serving bowl*."

The dream had set up for me two punchlines which served as trapdoors for my inflation of self to fall. The first was the cat's intelligence in opening the can, a feat that I would then have to begrudge the inability of my own dogs to perform. The second was my failure to correctly perceive the true intelligence and personality of the cat, for before I had only viewed the cat in reference to my understanding of the capability of dogs. The character of my professor was portrayed as presciently wise, guiding me to the ultimate revelation that she was not only more competent than me, but that she was more competent than I could comprehend. My struggle was casually amusing to her, for my revelation was expected and predetermined. As a final note to the somatic valence of the scenery, the crystal serving bowl was respected reference to the fancy feast cat commercials of the 1990s. This further elevated the cat above me in felt status.

Though I had portrayed myself as jocular in the challenge to my professor in waking life, my experiential self flagged the faux dominant behavior as incongruent with the true environmental conditions. As a new student in a prestigious institution with an esteemed and brilliant faculty member, my experiential self warned me to defer to the wisdom of my superior on the educational journey.

I conclude that this was a compensatory dream serving the function of reducing my performative inflation of self in relation to the professor, and an encouragement to appreciate and trust the instruction offered. To make the jokes about the cats and dogs I had suppressed my own anxiety, and the resulting discrepancy in the somatic markers manifested in a simulation preparing me better for future encounters of a similar kind. Technically, this simulation was constructed through the experiential recall of associative content that was somatically similar to the repressed affect in the waking life situation.

Of note, the scene was constructed from references to memories temporally far removed from the current waking life situation. The associative content was then composited to create a narrative scene that was entirely logical at the operant experiential level of conscious, but that was illogical at justification level of consciousness. Thus, in this dream my experiential self would undergo a powerful formative encounter comprised exclusively of coordinated volleys of secondary inducers.

Chapter 4: Irma's Injection

In 1899, Sigmund Freud published The Interpretation of Dreams, which outlines his theory of the function and mechanisms of human dreaming. In the second chapter of his book, Freud offers a demonstration of his method of interpretation by analyzing one of his own dreams. This dream, which he called, "Irma's Injection," was selected by Freud ostensibly due to his mastery over the details of his own personal history necessary for a thorough analysis. Through use of his signature free association technique, or what Jung would call *taking up the context*, Freud analyzed "Irma's Injection" by allowing his mind to flash to memories, characters, themes, and emotions that were elicited in response to the remembered content of his dreams.

Freud opens "Irma's Injection" with a preamble in which he explains a brief waking-life context for the situations and characters manifested in his dream. He wrote that he had in recent weeks been treating a young woman diagnosed with hysteria named "Irma." Freud described Irma as a close family friend, and noted that his feelings towards her were complicated by what we as modern therapists would call a "dual relationship." He reveals that he felt extra pressure to cure her due to the judgment he anticipated from family and friends if he failed. He reported that, though he had cured Irma of her hysteria, that the treatment was incomplete because she was still experiencing somatic symptoms. At the time, he was still unsure of what would be considered a complete cure for hysteria, and was frustrated with Irma because he expected her to agree with a "solution" that she refused to accept. Irma's treatment was ended due to summer holidays, and a short while later a close friend and younger medical professional, "Otto," visited Freud and reported that Irma was "better, but not quite well (pg. 138)." Freud reported that he felt annoyed

by perceived judgment in Otto's tone, and that night wrote a clinical case report on Irma that he planned to send to "Dr. M," who was the senior authority and physician in Freud's professional and personal circle. Freud wrote that he planned to do this in order to justify himself and his treatment plan. That night, Freud dreamt of "Irma's Injection" and, upon wakening, recorded it as follows:

"*A great hall - a number of guests, whom we are receiving - among them Irma, whom I immediately take aside, as though to answer her letter, and to reproach her for not yet accepting the "solution." I say to her: "If you still have pains, it is really only your own fault." - She answers: "If you only knew what pains I have now in the throat, stomach, and abdomen - I am choked by them." I am startled, and look at her. She looks pale and puffy. I think that after all I must be overlooking some organic affection. I take her to the window and look into her throat. She offers some resistance to this, like a woman who has a set of false teeth. I think, surely, she doesn't need them. - The mouth then opens wide, and I find a large white spot on the right, and elsewhere I see extensive grayish-white scabs adhering to curiously curled formations, which are evidently shaped like the turbinal bones of the nose. - I quickly call Dr. M, who repeats the examination and confirms it.... Dr. M looks quite unlike his usual self; he is very pale, he limps, and his chin is clean-shaven.... Now my friend Otto, too, is standing beside her, and my friend Leopold percusses her covered chest, and says "She has a dullness below, on the left," and also calls attention to an infiltrated portion of skin on the left shoulder (which I can feel, in spite of the dress).... M says: "There's no doubt that it's an infection, but it doesn't matter; dysentery will follow and the poison will be eliminated." ... We know, too, precisely how the infection originated. My friend Otto, not long ago, gave her, when she*

was feeling unwell, an injection of a preparation of propyl... propyls... propionic acid... trimethylamin (the formula of which I see before me, printed in heavy type).... One doesn't give such injections so rashly.... Probably, too, the syringe was not clean (p. 38)."

After introducing "Irma's Injection," Freud presents his detailed analysis of the dream by narrating free associations reflections about his personal life and inner states. A portion of the associations and reflections are summarized below, with effort made to maintain general fidelity to the linear nature of his associative remembrances and consequent revelations

"*A great hall - a number of guests, whom we are receiving* (p. 39)." Freud explains that he and his wife were living that summer in a large, cavernous house that was originally built for the purpose of entertainment. His wife had told Freud that day that she expected several friends, including Irma, to be present for her upcoming birthday party. Freud believes his dream has created the event in anticipation.

"*I reproach Irma for not having accepted 'the solution.' I say, "If you still have pains, it is really your own fault* (p. 39)." Freud explains that this is something he may have said in waking-life to Irma, as at that time he believed that his role as physician was limited to discovering and revealing to the patient the hidden meaning behind their distress. He reflects that this belief in method was an error that he later revised, but that at the time in his career that he was treating Irma it was a useful ignorance because it helped him manage the professional stress of feeling pressure to provide cures. He concludes by acknowledging that, in the dream, his primary emotion was an anxiousness to be free of blame for Irma's continued symptoms.

"*Irma's complaints - pains in the neck, abdomen, and stomach; she is choked by them. . . I am startled at the idea that I may have overlooked some organic affection* (p. 39)." Freud reports that this scene stemmed from a fear common to all psychiatrists of his day that work with neurotic patients that there was a physical cause for the hysterical symptoms that had been missed. However, Freud notes that there was a part of himself that he believed would have been relieved if Irma's continued somatic symptoms had been the cause of a physical origin because it would mean that he had fulfilled his psychiatric role to completion.

"*I take her to the window in order to look into her throat. She resists a little, like a woman who has false teeth. I think to myself, she does not need them. I had never had occasion to inspect Irma's oral cavity* (p. 39)." Freud is reminded of a patient of his in the past that was beautiful, had false teeth, and made effort to hide this fact from him when she opened her mouth for examination. Freud reports that this led to many memories of times with patients when embarrassing facts, for both himself and the patient, were revealed during similar examinations.

The way that Irma was standing at the window then reminded Freud of one of Irma's friends, whom he greatly liked, that had been standing at a window in a similar way when Freud had visited her. This woman was also one of Dr. M's patients being seen for choking symptoms. Freud suspected that this woman was also hysterical, and he had many times wished that she would ask him to see her as his own patient. He then remembers a different woman altogether who was often pale and, once, had become sick and looked puffy. Freud remembers her as not being at ease with him and would thus not be a "docile patient (p. 39)." Freud interprets this condensation composite as a desire to

replace Irma with a patient whom he felt would be easier to work with. He then wonders if the other two women that were part of the composite character, though he did not like them, would be more amicable to his ideas because they were more intelligent or sensible.

"*What I see in the throat, a white spot and scabby turbinal bones* (p. 40)." Freud is reminded of Irma's friend who was ill with diphtheria, and also the great anxiety he experienced when his eldest daughter was gravely ill two years prior. The scabby turbinal bones reminded him of anxiety over his own health due to previous frequent use of cocaine to treat nose swelling. He is then reminded of a female patient who had contracted severe necrosis in her nose for using cocaine. He then is reminded that it was he who had recommended cocaine, and that he was "gravely reproached" for the consequences. He reports to the reader that a close friend of his had died due to cocaine abuse.

"*I quickly call Dr. M, who repeats the examination* (p. 40)." Freud remembers a time when he had poisoned a female patient after prescribing a drug, and then rushed for the help of his more senior colleague. This patient and his eldest daughter both shared the same first name. Freud felt as though, in this part of the dream, he was reproaching himself for lack of medical conscientiousness.

"*Dr. M is pale; his chin is shaven, and he limps*." Freud remembers that, in waking life, Dr. M's friends are often worried about his health. Freud identifies that Dr. M is a physical composite of Freud's older brother, whom Freud had learned in previous days had been limping due to arthritis. Freud then discloses that he is on bad terms with

both Dr. M and his brother for the same reason: they had both recently rejected ideas of his.

"*My friend Otto is now standing next to the patient, and my friend Leopold examines her and calls to attention to a dullness on the left side* (p. 40)." Freud is reminded of his positive feelings for his friend Leopold's medical conscientiousness, and recalls a scenario similar to the dream scene in which Leopold impressed Freud by being thorough in assessment.

"*Dr. M says: 'It's an infection, but it doesn't matter; dysentery will follow, and the poison will be eliminated* (p. 41).'" Freud is immediately struck by the absurdity of Dr. M's hasty diagnosis. Freud notes feeling both consoled at Dr. M's positive prognosis that shifts blame from him, and also superior to Dr. M due to the faulty nature of the diagnosis. He explores the dreamwork's choice of dysentery and recalls a man who was being treated for intestinal difficulties. Freud believed the man was hysterical but did not use psychotherapy on him. Instead Freud sent him on a sea voyage. The man suffered from intestinal difficulties abroad, and his doctor in Egypt diagnosed him with dysentery. Freud reports feeling guilt about the event. Freud believes, at this point, through the dreamwork, that he has retaliated against both Irma and Dr. M for not agreeing with his ideas.

"*Probably too the syringe was not clean* (p. 42)." Freud believes this is another reproach of his friend, Otto's medical conscientiousness, and notes that this elicited memories of his own fears of infection, and thus is the reason why Freud always uses a clean syringe.

Freudian Split

In her book, Psychology's Grand Theorists, Amy Demorest summarizes Freud's theory and analyzes his interpretation of "Irma's Injection (Demorest, 2005)." After reviewing Freud's distinction between *manifest* and *latent* dream content, she explains that Freud believed that, within the dream, Irma's appearance, M's assurance, and Otto's needle injection were ultimately the manifest expressions of a latent wish for vengeance. This desire for aggression was sparked by Freud's perception that his colleagues and patients doubted his competency and authority. Because feelings of revenge against patients and friends would be perceived by Freud as unacceptable and unhelpful, the wish to aggress was repressed into his unconscious. There, the wish could seek safe and veiled expression within a dream. Ultimately, from Freud's perspective, the purpose of the dream was to create a compromise between his unconscious wish to aggress and his internal censor that would deem such a wish shameful. Indeed, Freud concludes his own interpretation by stating the dream was primarily an expression of his wish to be free of responsibility for Irma's incomplete cure, and to aggress against his colleagues from whom he felt pressured and constrained (Demorest, 2005). However, we should notice that Freud's interpretation of "Irma's Injection" is absent of the sexual reductionism that would distinguish his infamous legacy. Why is this?

Demorest points out that Freud hints several times in The Interpretation of Dreams that he is leaving out a complete analysis of "Irma's Injection (Demorest, 2005)." For example, Freud writes in a footnote: "…I have practically never reported a complete interpretation of a dream of my own. And I was probably right not to trust too far to the reader's discretion (p. 44)." In a later portion of the book, he analyzes a nightmare he

once had at the age of seven. In this dream, he saw his mother carried to her bed by tall human-like figures with large bird beaks. He woke up terrified and then alerted the entire home with his screams. In briefly analyzing this dream, Freud takes the reader through a free association chain similar in style to the treatment given to "Irma's Injection." He concludes that there are *two layers* with which the dream could analyzed. In short, because the birdmen were inspired from a picture he had seen of sparrow-hawk figures inscribed on a Pharaoh's tomb, Freud writes that he at seven years of age experienced the dream in a way that expressed a fear of his mother dying. This is the surface level of analysis. However, Freud writes that sex anxiety had already been instilled in him by that age, and so the dream, at a deeper level, was actually the safe expression of a sexual wish:

"I awoke with this anxiety, and could not calm myself until I had waked my parents. I remember that I suddenly became calm when I saw my mother; it was as though I had needed the assurance: then she was not dead. But this secondary interpretation of the dream had only taken place when the influence of the developed anxiety was already at work. I was not in a state of anxiety because I had dreamt that my mother was dying; I interpreted the dream in this manner in the preconscious elaboration because I was already under the domination of the anxiety. The latter, however, could be traced back, through the repression to a dark, plainly sexual craving, which had found appropriate expression in the visual content of the dream (p. 182)."

Freud then outright makes the claim that the ultimate origin of neuroses is exaggerated development of child-to-parent sexual desire:

"That the sexual intercourse of adults appears strange and alarming to children who observe it, and arouses anxiety in them, is, I may say, a fact established by everyday experience. I have explained this anxiety on the ground that we have here a sexual excitation which is not mastered by the child's understanding, and which probably also encounters repulsion because their parents are involved, and is therefore transformed into anxiety (p. 182)."

And:

"The theory of the psychoneuroses asserts with absolute certainty that it can only be sexual wish-impulses from the infantile life, which have undergone repression . . .[that] therefore supply the motive-power for all psychoneurotic symptom-formation (p. 188)."

A formal critique of Freud's Oedipal theory is beyond the scope and interest of this current work, but we highlight it briefly here to remind the reader that there is every good reason to believe that Freud intentionally moderated himself in his interpretation of "Irma's Injection." His purpose in limiting his interpretation appears to be both to protect his own reputation from the scandal of a full reveal, and also as a technique to ease the reader into his novel interpretative methods (Demorest, 2005):

It should thus be clear that Freud's analysis of dreaming operates at two levels. At level 1, Freud uses his introspective techniques to track a range of socio-emotional dynamics in his dream content that include, among others, shame, pride, guilt, love, fear of failure, and anger. This is a universal domain of human processing that is delineated by the Influence Matrix, and thus should offer high explanatory power across populations and cultures (Henriques, 2011). However, Freud is not content to remain at this level of

analysis, and hence attempts to explain socio-emotional anxiety as conflict originating from deeper repressed sexual and aggressive impulses; this is his infamous level 2 analysis. From our UT perspective, we view Freud as successful in pioneering the level 1 analysis, and as operating from a dysfunctional split at his level 2 analysis. Recall that Jung also draws the boundary here, and praises Freud for his work in developing a method for *taking up the context* (Jung, 1945). Beyond that boundary, Jung criticizes traditional Freudian method for its *causal perspective,* which is the reductionism of all psychic material to sexual and aggressive wishes.

Jung is not alone in his dissent, and Henriques (2011) describes a Neo-Freudian lineage that rejected dual-drive theory and instead emphasized the importance of socio-emotional factors as motivational forces. For example, Neo-Freudian theorist Alfred Adler concluded that social superiority was the ultimate goal and motive in human life. Adler believed that the fear of never attaining a sense of superiority led to the development of subconscious inferiority complexes that could then in turn cause neurotic symptoms and behavior. Erik Erickson emphasized that psychological development consisted of managing tensions between self and others. Erickson highlighted the importance of basic trust versus mistrust, and the ways in which an individual expects to be gratified or threatened by others (Swanson, 1998). Karen Horney (1945) believed that neurotic behavior stemmed from *basic anxiety*, which developed from feelings of insecurity, helplessness, and abandonment. Psychoanalyst John Bowlby, famous for his attachment theory, argued that psychological health was determined by nature and quality of real relationships in the present, and that the capacity to develop quality relationships was influenced by the nature of the infantile bond with primary caregivers. Finally,

Henriques notes that modern psychoanalytic theory now widely acknowledges and emphasizes the primary importance of current relationship quality in human psychology well-being (Wachtel, 2008; Westen, 1998).

Pinging Around the Matrix

Because Freud adequately recorded his affective reactions and the waking-life contexts for his dream content, we can now use Behavioral Investment Theory and the Influence Matrix to connect Freud's level 1 analysis of Irma's Injection to our developing Unified Theory of dreaming. Recall that the Influence Matrix (IM) is an extension of Behavioral Investment Theory (BIT) into the domain of social motivation and emotion (Henriques, 2011). The P – M => E formulation is a structure of the IM, and operates as a feedback loop within the domain of experiential consciousness to guide individuals towards their preferred and internalized methods of obtaining relational value. As demonstrated in my own "Fancy Feast Cat Dream," we should ignore the irrationality of the objective dream content and instead craft a narrative through the logic of experiential logic, wherein we map the socio-emotional charges that the dreamer experiences when confronted with dream symbols and characters. In contrast to the broad thematic analysis applied to my own dream, we will now apply the IM with precision to our excerpts of Freud's own analysis of "Irma's Injection" to create a specific map the socio-emotional calibration that Freud undergoes during his dream.

"*A great hall - a number of guests, whom we are receiving* (p. 39)." Freud reports that he went to sleep in great angst regarding this upcoming party to be thrown by his wife. His explicit intra-psychic tension is that he experientially feels superior to his colleagues and mentor, but is confronted by the unsettling reality that Irma, a highly

visible well-connected patient of his, has not been cured through his interventions. Freud's default and preferred location on the IM (see Figure) is in the top-left quadrant, and thus he relentlessly seeks external environmental conditions that allow him to experience high autonomy and dominance in relation to others (Demorest, 2005). The fact that he, Irma, his colleagues, his mentor, and an audience of friends and associates, will all be in the same place at the same time, means that Freud's experiential consciousness system anticipates a potential social disaster. In Adlerian terms, Freud faces humiliation and the threat of being seen as inferior by his community if Irma, a known patient of Freud's, is seen by everyone as uncured and nonplussed. Freud is thus compelled to prepare for this encounter in a way that will navigate this impending threat to his social status. The dream begins in a cavernous great hall in order to set the appropriate affective tone for the anticipatory simulation.

"*I reproach Irma for not having accepted 'the solution.' I say, "If you still have pains, it is really your own fault* (p. 39)." Freud confronts the stimulus of Irma with *anger*, and moves to the top-left of the quadrant. He is relieved to place the blame on her and to secure his preferred relational positioning on the IM.

"*Irma's complaints - pains in the neck, abdomen, and stomach; she is choked by them. . . I am startled at the idea that I may have overlooked some organic affection* (p. 39)." The dream content shifts suddenly into stimuli that jolt Freud to the bottom-right quadrant of the IM. Freud's blaming of Irma is somatically discrepant with his medical and intellectual conscientiousness. Freud is helplessly seduced into submission by the sudden opportunity to further examine her and relieve himself of his suppressed *guilt* regarding his failure to cure her.

"*I take her to the window in order to look into her throat. She resists a little, like a woman who has false teeth. I think to myself, she does not need them. I had never had occasion to inspect Irma's oral cavity* (p. 39)." Here there is a flurry of somatic blending and compositing that frames Irma in such a way that she is now experienced by Freud as a more manageable and preferred patient. Freud briefly experiences the restoration of his *pride, hope,* and *relational value* as he moves to an approach orientation at the top/top-right quadrant of the IM.

"*What I see in the throat, a white spot and scabby turbinal bones* (p. 40)." Freud is confronted with stimuli that remind him of his involvement in significant medical and relational failures. He experiences *sadness, pain, fear,* and *shame,* and is jolted downward to the bottom-left quadrant of the IM.

"*I quickly call Dr. M, who repeats the examination* (p. 40)." Thoroughly reduced and afraid, Freud calls for the help of his mentor—a strategy he employed in the past when he had poisoned a patient.

"*Dr. M is pale; his chin is shaven, and he limps*." Submitting to the authority of the mentor provides Freud little satisfaction, as the mentor arrives adorned and mutated with somatic markers that elicit emotions of *hostility* and resentment in Freud, thus moving Freud to the middle-left quadrant of the IM.

"*My friend Otto is now standing next to the patient, and my friend Leopold examines her and calls to attention to a dullness on the left side* (p. 40)." Freud is reminded of the support of his friends, and of his admiration for Leopold's conscientiousness. He experiences emotions of *affiliation* and moves to the middle-right of the IM.

"*Dr. M says: 'It's an infection, but it doesn't matter; dysentery will follow, and the poison will be eliminated* (p. 41).'"

The absurd and hasty diagnosis reminds Freud of his intellectual superiority, and launches him across the IM to his preferred position at the top-left quadrant. However, the victory is short lived, for the dysentery diagnosis itself reminds Freud of his own failure to properly diagnose this condition in one of his own patients. Freud is jerked back down to the bottom-left quadrant of the IM.

"*Probably too the syringe was not clean* (p. 42)." Otto moves in to treat Irma, and Freud is activated by *anger* that propels him, once more, to his preferred position on the IM, the top-left quadrant.

A UT analysis of "Irma's Injection" reveals a series of sophisticated socio-emotional calibration events that unfold within the experiential consciousness level of human processing. In his dream, Freud is presented with symbolic representations of a back-log of repressed affect that threatened his relational value. We were able to track the rapid symmetrically shifts on his felt location on the IM as he faced and resolved each dramatization of intrapsychic discrepancy. The experiential narrative is summarized as follows:

"How can I be the gifted superior if Irma is not cured? *Maybe it is Irma's fault for not listening to us*. But what if I have overlooked something important? *Maybe a different patient would have been a better fit.* But I have made fatal errors in the past! *Then maybe we should call for help!* But I hate being helped because it makes me feel inferior. *Maybe we can trust the help of our peers*. No, I may have made mistakes, but by comparison to these others I am ultimately superior."

What Freud was missing for a more complete analysis of dreams was not a clever linkage to a repressed sexual or aggressive drive, but rather an integrative frame for socio-emotional processing at the level of experiential consciousness (Henriques, 2011; 2003). Freud's free association technique brilliantly reveals semi-hidden emotional material within the dream content, but then falls short at organizing this knowledge into a helpful frame that is universally applicable. If Freud had known the true value of what he had unearthed on his path to the dual-drive theory, he may have gone on to develop a more diagnostically useful approach to dream interpretation that would have also been more palatable to the psychological community. It is thus interesting that he himself quarantined his flagship interpretation, "Irma's Injection," from the dual-drive theory that contaminated his legacy and delayed recognition of his insights into the human mind and dreaming. We end this chapter with a final quote from Freud:

"For the present I am content with the one fresh discovery which has just been made: If the method of dream interpretation here indicated is followed, it will be found that dreams do really possess a meaning, and are by no means the expression of a disintegrated cerebral activity, as the writers on the subject would have us believe (Freud, 1976, p. 43)."

Chapter 5: Conclusion

The purpose of this exploratory work was to test the capacity of Henriques' Unified Theory of Psychology (UT) to integrate knowledge and theory related to the adaptive function of dreaming. Dreaming is a ubiquitous and mysterious phenomenon that has engaged our imagination since at least the beginning of our known history (Dement and Vaughan, 1999; George, 1999). And yet, given the fragmentation of the field of psychology (Henriques, 2011; 2003), it is no surprise that there has been no psychological consensus regarding the process and adaptive function of dreaming. Using the UT and its components, we suggest that dreaming is operant-experiential processing segregated from the inhibitory functions of self-justification and private self-consciousness. As for dream interpretation, the meaning of dream content itself can potentially be extracted using techniques inspired from level 1 Freudian analysis, or what Jung called *taking up the context*. Once the socio-emotional reactions within the dream have been recalled and linked to their waking-life contexts, we demonstrated that the Influence Matrix shows promise as tool to track the relational dynamics of P - M => E that occur within the dreams that feature social interaction.

We began with a review of major perspectives in the psychological study of dreams. From there we saw that there were multiple opinions regarding the adaptive function of dreaming, and also in the methodology through which the study of dreaming is approached. It was plain to see that the fragmented pluralism that defined psychology broadly had significantly impeded our cumulative understanding of the phenomena (Henriques, 2003). We thus independently reviewed the psychoanalytic perspective, the

Jungian perspective, the physiological perspective, the contemporary emotional perspective, and the evolutionary perspective.

Then, we reviewed Henriques' Unified Theory of Psychology (UT), and applied its components to the dream perspectives identified in the previous chapter. We began with the Tree of Knowledge System (ToK) for a broad view of our scientific understanding of emerging behavioral complexity across all of known time. Because our review of the literature suggested that dreaming evolved as a mammalian function related to consolidation of emotional experience, we then zoomed in on Behavioral Investment Theory (BIT), the joint point between Life and Mind domains of complexity. We then focused on BIT's theory of emotional processing, which is expressed in the formula P - M => E, as a basis for consolidating the claims regarding the adaptive function of dreaming. Because human beings are socio-emotionally motivated beings (Henriques, 2011), we extended P - M =>E into the Influence Matrix, which is an integrative tool for conceptualizing styles for obtaining relational value. Following the progression of cognitive complexity outlined in the Architecture of the Human Mind, we then reviewed the Justification Hypothesis and used it to introduce the Tripartite Model of Human Consciousness. At this point, we had mapped out the major layers of human information processing within the context of the broader map of unfolding energy and information complexity, and could therefore begin to see the ways in which the fragmented views on dreaming could be assimilated and integrated.

First, we reviewed the Epic of Gilgamesh through the lens of the UT to highlight features of the early human relationship with dreaming, and to note the impact of dreaming as a feature of human Culture. Next, we discussed the theoretical similarities

between Freud and Alan Hobson, two figures that have been oppositional and divisive in the psychology study of dreams. There we showed that they shared similar ideas regarding energy economics as a basis for organismic motive, similar conceptualizations for primary and secondary consciousness (experiential and private-self consciousness, respectively), and the idea that dreams are mechanism through which surprise is protected against and accurate models of the external world are fortified (Hobson, Friston, and Hong, 2014; Freud, 1920).

From there, we identified that both Freud and Hobson lacked a integrated and contiguous theories of emotional processing, and so we elaborated on our P - M => E frame by reviewing the Somatic Marker Hypothesis (Damasio and Bechara, 2004) within the context of dreaming. There we showed in further detail the mechanisms through which operant-experiential processing occur, and I demonstrated how those processes may be operative socio-emotionally by analyzing one of my own dreams through our developing UT framework for dreams.

Lastly, we returned to the specifics of the traditional analytic method of *taking up the context*, and used Freud's self analysis of his dream, "Irma's Injection," as a test case for our Unified Theory approach to dreaming. In doing so, we propose that Freud's dream theory is split at two levels. At level 1 we start with Freud and Jung's insights regarding introspection and free association as a means of decoding the logically irrational composited scenes and characters we experience in dreams. From a UT perspective, these composites can be thought of as the image-based representations of somatic markers organizing and consolidating in real time through experiential feedback of the simulated experience. By tracking Freud's disclosure of his affective experience

throughout his dream, we charted his self-other shifts on the Influence Matrix, whereupon we witness rapid vacillations between overconfidence and inferiority in response to the presented dream stimuli. Thus the Unified Theory validates Freud's initial conclusion that the purpose of that particular dream was a management of his wish for superiority and competence juxtaposed against his anxiety of being confronted with his failures in front of male colleagues and superiors. Freud's level 2 analysis is framed as a dysfunctional preoccupation with dual-drive theory derived from his rejected Oedipal conflict theory of neurosis (Demorest, 2005; Henriques, 2003; Westen, 1998; Jung, 1945).

Putting it all together, from a Unified Theory frame, dreaming can considered a possible evolutionary solution to an information processing problem (Winson, 1985). As our reptilian ancestors began their transition into proto-mammals through the neurological development of socio-emotional learning systems, the demand to process the increased data from those systems became efficient to manage during sleep. As demonstrated by the work by Damasio and Bachara (2004), operant-experiential consciousness keeps careful record of our experiences, and those records nuance our model of the environment in reference to making behavioral decisions regarding desired goal states. The specific model for this process is P - M => E, where by the "*perception of an actual state relative to a motivational state leads to an emotional state* (Henriques, 2011, p. 74)."

But how does the brain sort these contextual experiences that accrue overtime, and especially when there are discrepancies between them? A clue is offered by looking at Henriques' Architecture of the Human Mind (see Figure 2). We see that operant-

experiential processing at level 2, followed by a leap in cognitive ability to imaginative thought at level 3. From a Behavioral Investment Theory (BIT) perspective, imaginative thought is theorized to have evolved as means of reducing energy expenditure in the solving of problems (Henriques, 2011). It is easier and safer to imagine behaviors and their consequences rather than engage in physical trial and error learning. The Somatic Marker Hypothesis complements this claim by adding that the images we see and experience in our "mind's eye" serve as secondary reinforcers (Damasio and Bechara, 2004). This simply means that imagining biting into a sour lemon can cause salivation, and imagining a positive outcome to a gambling task can entice one into taking risks. Neurologically, imaginative thought at the advanced planning level of complexity is associated with the development and expansion of the frontal cortex, which is a higher-evolved cognitive function demonstrated by primates (Panksepp, 1998). This leaves us with a processing gap between level 3 thought and the mechanisms of operant-experiential processing. Indeed, the evolutionary hypothesis of dreaming is that REM sleep evolved as a means of consolidating learning through simulating experience during sleep (Winson, 1985). Just as we do now, our early mammalian ancestors would go to sleep, experience paralysis, and then viscerally *experience* the dramatized affect-based memories. From a UT lens, we could view REM sleep as a form of proto-working memory, or the hybrid intermediary between trial and error learning and simulative thought.

Chronologically, the next major event in regards to our UT understanding of dreaming occurs with a review of The Epic of Gilgamesh, which is a record of what our ancestors might have thought of dreaming 4,000 years ago (George, 1999). Henriques'

Justification Hypothesis states that our evolutionary transition from ape to human being was accelerated and defined by the neurological development of a language-based private-narrator designed to craft experience into stories and explanations that would be socially justifiable to other people. This led to the bifurcation of consciousness between experiential and private-self (see Figure 4), and the development of two filters, Freudian and Rogerian. The Freudian filter limits private self-consciousness' exposure and access to experiential processing, and the Rogerian filter limits information flow from private self-consciousness to the external environment. The primary purpose of the development of this language-based justification system was to more efficiently manage relational value and coordinate group efforts (Henriques, 2011). For example, "Here is *why* you should consider me as a mate," "I did not really mean to hurt you *because*," and "*If* we do it this way, *then* our rewards will be greater than that way."

However, an interesting byproduct occurs when the human being is compelled create justifiable narratives out of experiential material that passes through the Freudian filter and makes it way into private self-consciousness. How in the world does one make sense of his or her *dreams*, which are known for their powerful and bizarre content? To this day, in the 21st century, we are still sorting it out. The amount of content dedicated to dreams in The Epic of Gilgamesh is evidence that dream interpretation and incubation has been an occupation of interest for a great long while. Specifically, we see the descriptions of dream symbols and metaphors congruent with contemporary dream theories concerning the presence of Central Images (Hartmann, 2010), that the protagonist, a great warrior, is anxious to interpret the meaning of his dreams, that the dreams are conveyed as anticipating future threats (Revonsuo, 2000), and that the dream

interpreters in the story were characterized as valued and wise. Finally, if we refer to the Tree of Knowledge System (see Figure 1), we note that dreams have had a significant presence in the domain human Culture. The fact that Gilgamesh has a dream *about* his dream being interpreted should indicate that what we *think* about dreams may have significant impact on *what* and *how* we dream.

Additionally, we found support for the Tripartite Model of Human Consciousness and its relevance to modeling our relationship with dreaming through the physiological studies of lucid dreaming (LaBerge and Rheingold, 1990). In normal dreaming, the parts of the brain associated with emotional processing are elevated in activity (Braun, et al., 1997; Nofzinger et al. 1997; Marquet et al., 2000), whereas the prefrontal cortex, the part of the brain associated with inhibition of unwanted thoughts and impulses, is deactivated (Vos, et al., 2009). However, in lucid dreaming, the prefrontal cortex is shown to return to activity (Dresler et al., 2012). Though more studies must be done to confirm these neurophysiological correlates, these initial studies validate the existence of the Freudian filter, and the segregation between experiential and private self consciousness.

Limitations

This work was a conceptual exploration constructed through the synthesis of Henriques' Unified Theory of Psychology and a selective literature of dream research and theory. From a design perspective, the conclusions drawn from this work, while theoretically informed, are speculative. The lack of empirical or quantitative approach significantly limits the capacity for specific determinations and claims to be made about the nature of dreams. Further, dreams are a complicated and politically controversial construct within the field of psychology, and may be particularly susceptible to

confirmation and cultural bias. Because dreams are prohibitive to study in laboratory settings, there is also a relative shortage of empirical data to draw upon when constructing theories about dreams or making extrapolations about their meaning. Thus, the current work is aimed at test the feasibility of future integrative efforts between the Unified Theory and the construct of dreaming.

Future Directions

The domain of dreaming is broad, and there are many angles from which to approach their study. However, future directions in a Unified Theory approach to dreaming could benefit from both broad and focused integration between existing dream literature and the components of the Unified Theory. For example, future studies could choose one specific component, such as the Tripartite Model of Human Consciousness, and organize dream literature, and perhaps specifically lucid dreaming, through that lens. An even broader view could instead examine Jungian claims about the collective unconscious through the lens of the Architecture of the Human Mind, with Geary's concept of Soft Modularity as a guide.

In regards to dream interpretation, future studies could include a study of dream reports using the Influence Matrix as an interpretive lens. Gathering dream reports and utilizing trained scorers could offer an empirical and quantitative method through which test the speculative claim made in this work that dreams contain socio-affective content that can be organized using the Influence Matrix.

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